The ENCYCLOPEDIA of Origami

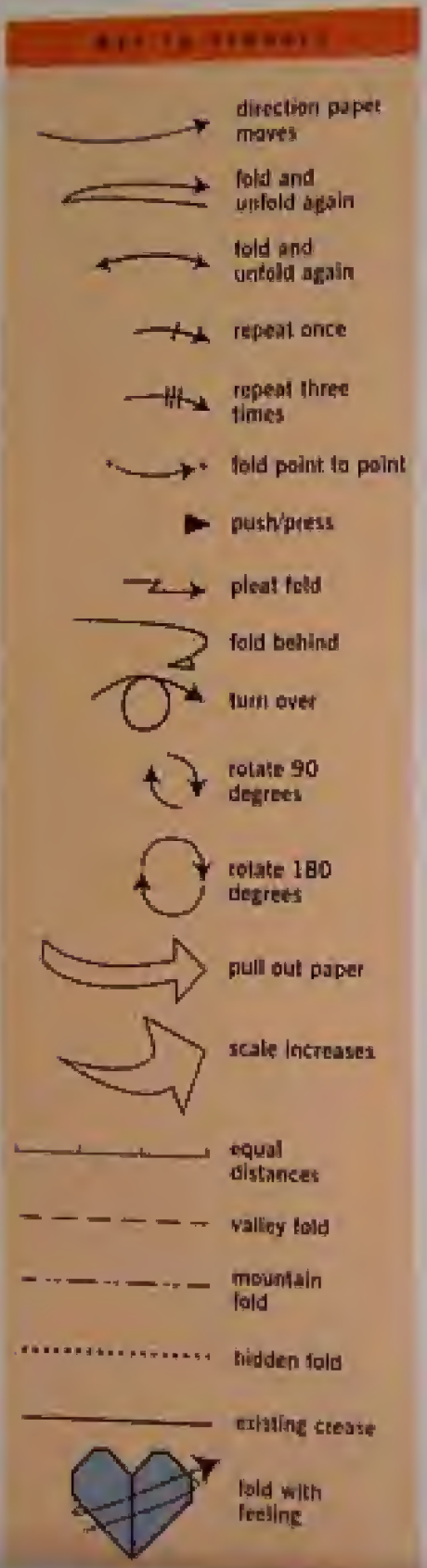
The complete, fully illustrated guide to the folded paper arts

Nick Robinson

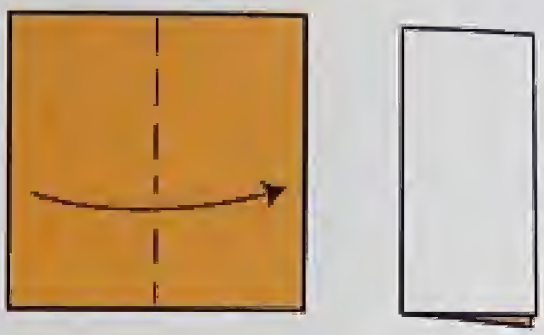
BASIC FOLDS

At the heart of origami, there are only two folds: a valley fold and a mountain fold. You make them both (on opposite sides of the paper) whenever you make a crease. However, there are a number of instruction symbols that show you exactly where the crease is to lie. If you wish to progress in origami, you need to recognize all the standard symbols. There aren't many, although some artists draw them in slightly different ways.

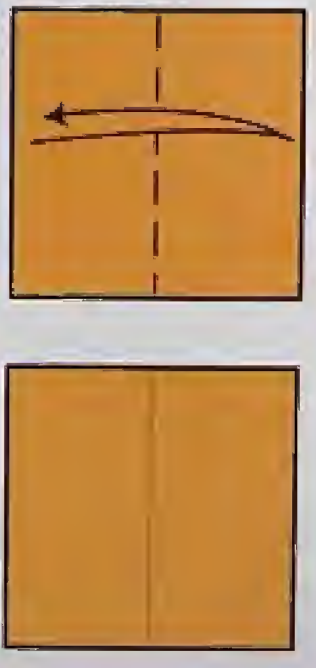
Although many origami diagrams have text to accompany them, the beauty of origami symbols is that you don't need the text and so can follow diagrams written in any language. The symbols themselves should provide all the basic information you need. However, if there is text, you should also read it! Always 'read ahead' – look at the next step so you can see what you are aiming for.



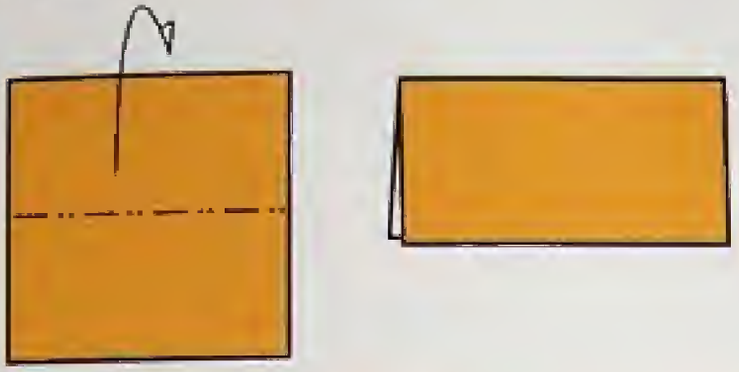
Valley fold This fold can be made while the paper is flat on the table. The arrow shows the direction in which the paper moves. This type of crease is usually 'located', meaning you fold to a specific point, edge or crease.



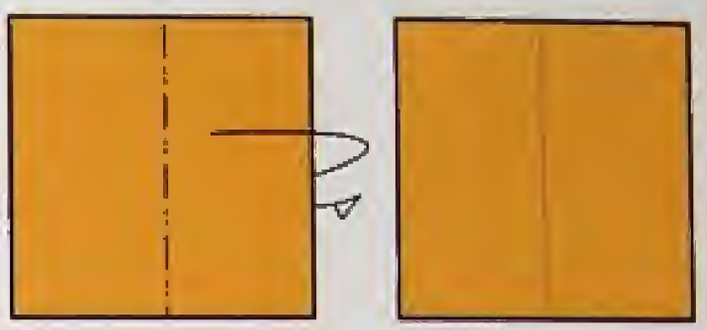
Valley fold and unfold Make a valley in the usual way, then unfold the paper to its position before the valley fold was made. Note the thinner line indicating the presence of a crease. Sometimes, a single line with an arrowhead at each end is used to indicate this move. While giving you essentially the same information, this doesn't tell you which side of the paper should move.



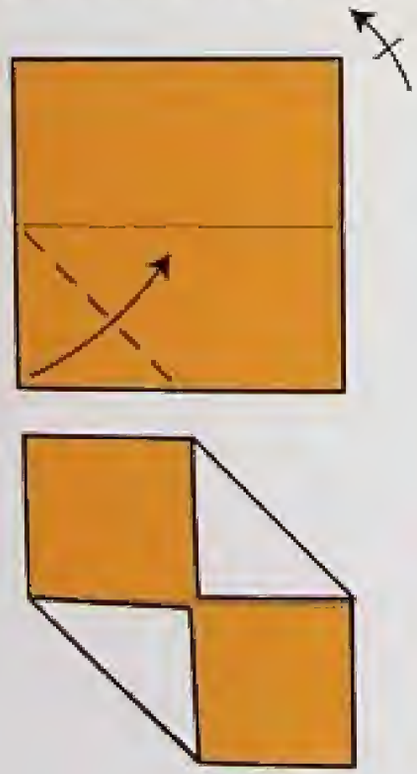
Mountain fold The paper folds underneath in some way so the fold must be made with the paper 'in the air'. Note the arrowhead, which is different to the valley-fold arrowhead. A mountain fold can be performed by turning the paper upside down and making a valley fold instead



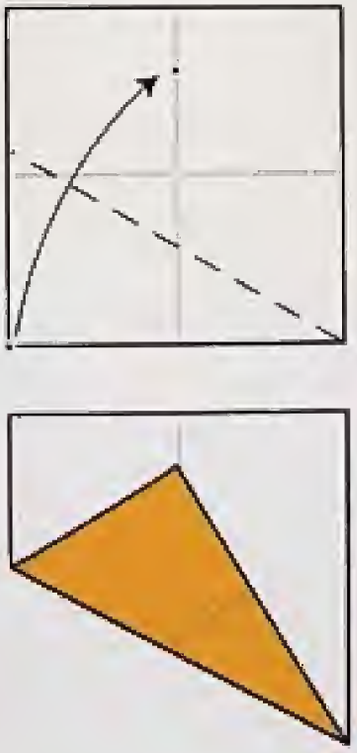
Mountain fold and unfold Complete a mountain fold, then unfold the paper to its original position



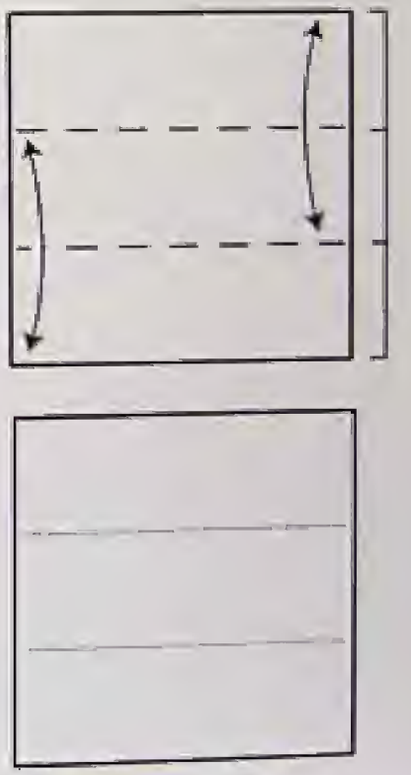
Repeat fold A fold indicated by the repeat arrow (in this case, taking a corner to the centre), should be repeated on a matching corner or side. Each notch on the arrow indicates a single repeat. This symbol is typically used to keep a diagram from becoming too busy or to avoid extra diagrams. Always check the next diagram if you are in doubt where to repeat.

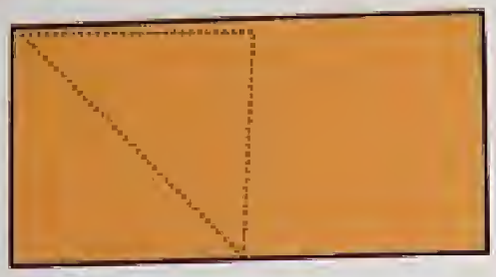


Fold point to point Plenty of folds do not have a clear location (such as a corner or intersection of creases) to fold to as they are made. In these cases, small dots are used to indicate the start and end of a fold.

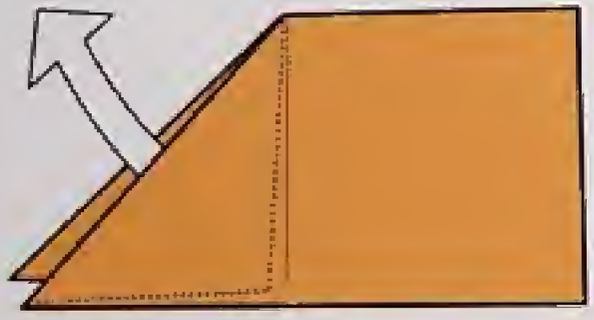


Fold equal amounts The rule next to the paper indicates that the creases are to divide the paper into equal thirds – although it doesn't actually tell you how to do this (see dividing a square into thirds, page 35). Note the alternative 'fold and unfold' symbol. Other rules can indicate quarters, sixths or fifths.



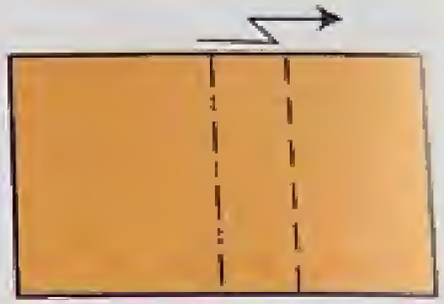


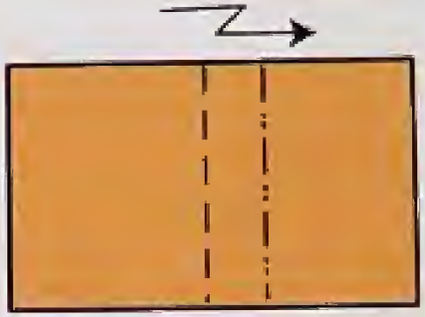
Hidden fold Sometimes a fold is made on layers of paper hidden inside the model. In this case a dotted or grey line is used to indicate where the fold takes place. It's important to read the text carefully at this stage.



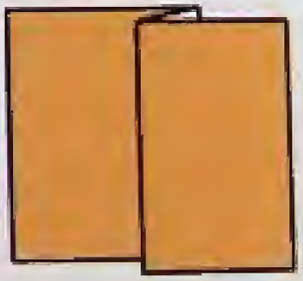
Pull out paper Some paper is released from within or underneath the model. Often, some degree of unfolding is necessary to do this. Never simply force the paper out.

Pleat on top A sequence of valley and mountain folds that forms a pleat. The upper layer moves on top of the lower layer forming a pleat in the paper. Part of the paper will then have two layers.





Pleat underneath Clearly, this is the same as the previous fold, but from a different perspective. Very often, you will see the pleat arrow and be expected to figure out where the paper goes yourself. Always check the next step if you're in doubt.

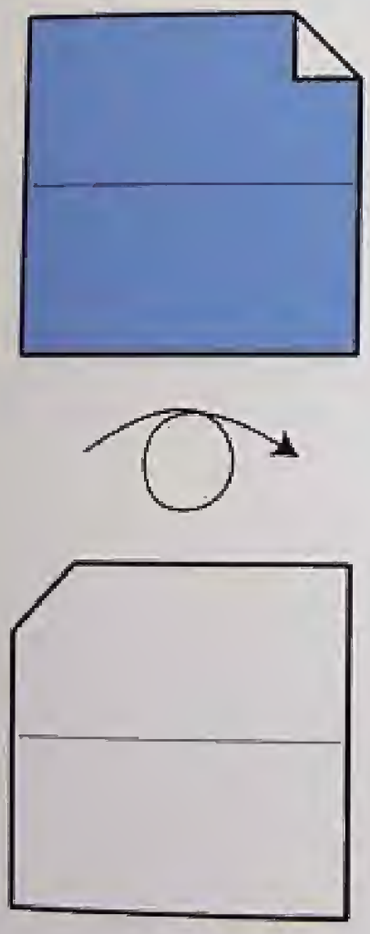


Fold with feeling Take special care whenever you see this sign. It means either the step needs very careful folding or you should fold gently. The symbol was inspired by the late American folder Michael Shall, who always insisted that we should 'fold with feeling'.

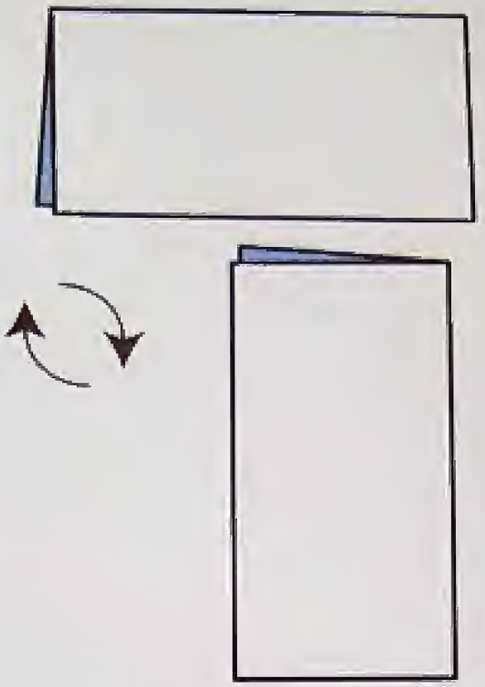
CHANGING ORIENTATION

With many steps, life is made easier if you alter the position of the paper. This may mean turning it over (like tossing a pancake) or rotating to a new position.

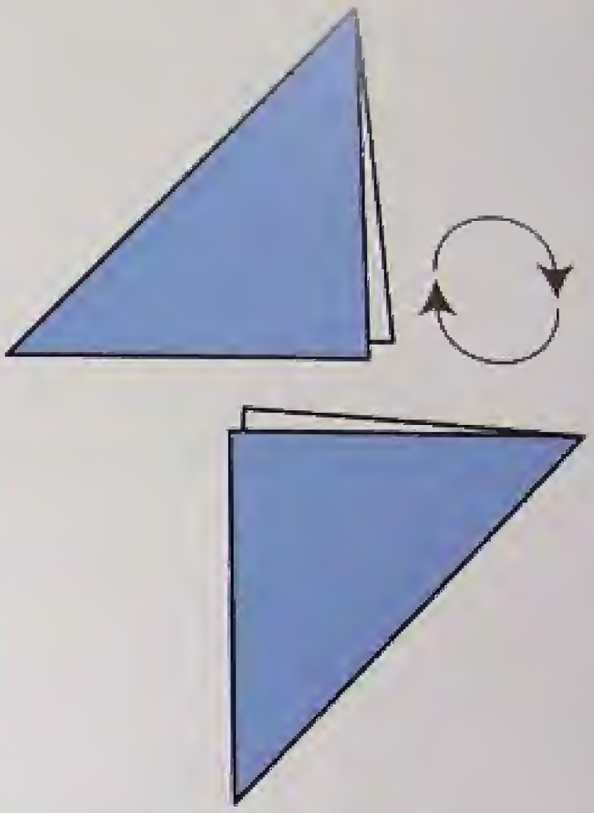
Turn over paper Lift the paper up and turn it over from right to left or left to right. If the arrow is rotated through 90 degrees, it indicates a turn from top to bottom or vice versa.



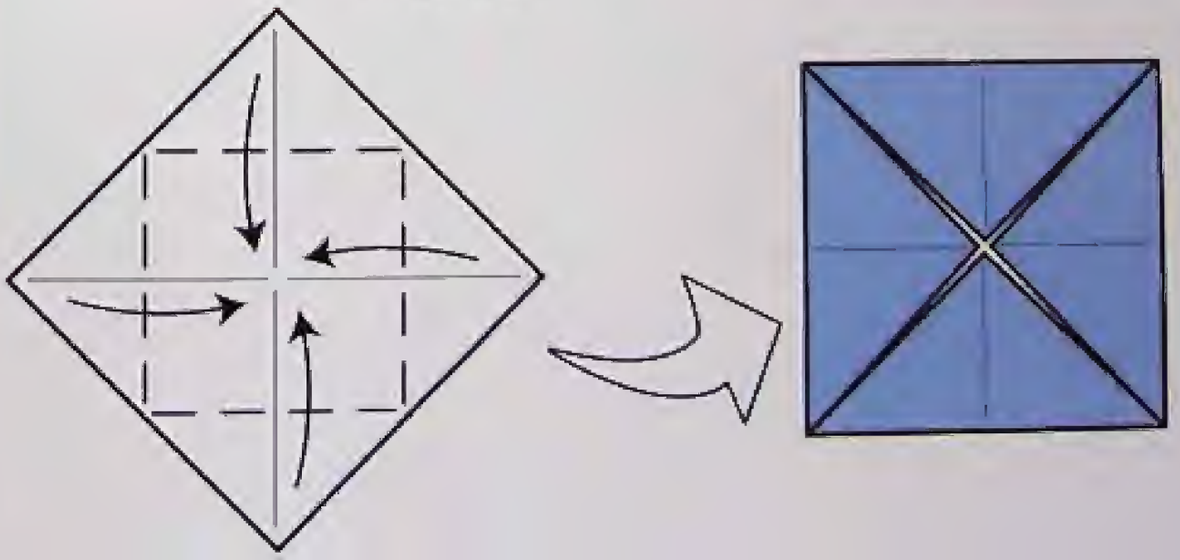
Rotate paper 90 degrees The arrows show the direction in which the paper is to be rotated.



Rotate paper 180 degrees The arrows show the direction in which the paper is to be rotated. If an angle fold is involved, open your paper to the next diagram.



Scale increase As a sequence of folds progresses, the model usually gets smaller. In order to make the diagrams easy to read, at some stages the next step will be shown proportionally larger. Some diagrams simply do this without indicating, while others use a matching 'scale increase' symbol where appropriate.



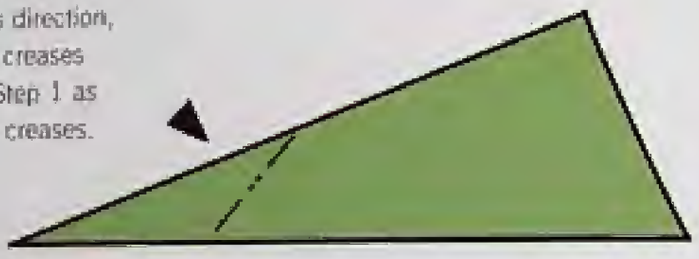
REVERSE FOLDING

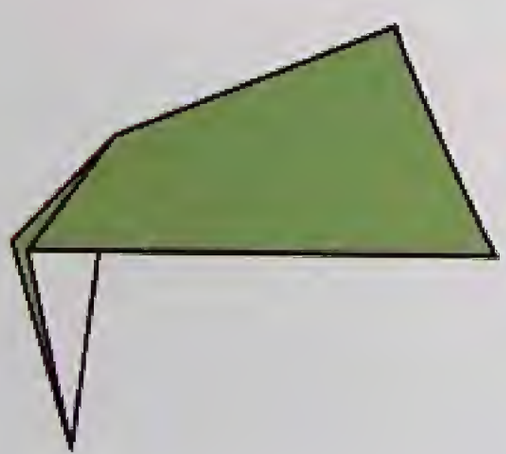
This technique often confuses beginners to origami, but, if you analyse it carefully, it is perfectly straightforward. The name comes from the fact that a section of the paper reverses from valley to mountain or vice versa. It is perhaps used most frequently to form feet or beaks, but also has many other uses. The process of adding necessary creases before making a fold is known as 'pre-creasing'.

Inside reverse Method 1

1 Make a pre-crease where the reverse fold will be.

2 Press the pointed end of the paper gently so it reverses direction, using the creases made in Step 1 as mountain creases.



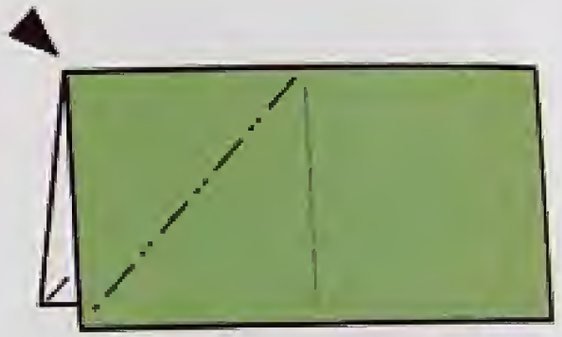


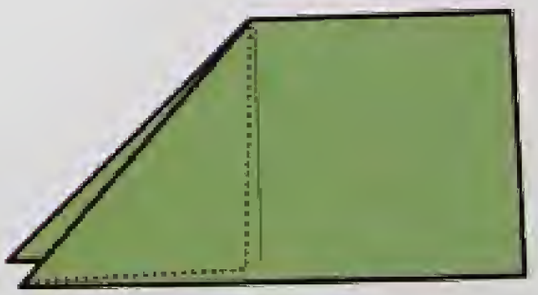
3 The completed fold.

Inside reverse Method 2

1 Make a pre-crease where the reverse fold will be.

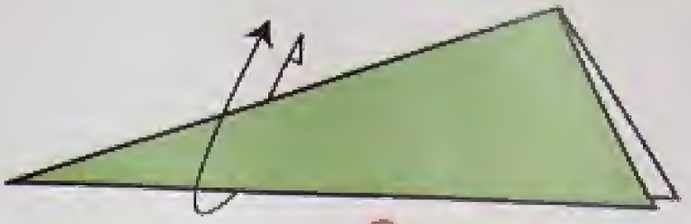
2 Carefully push the corner between the layers.





3 The completed fold.

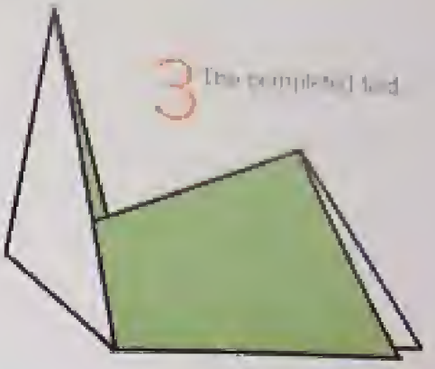
Outside reverse



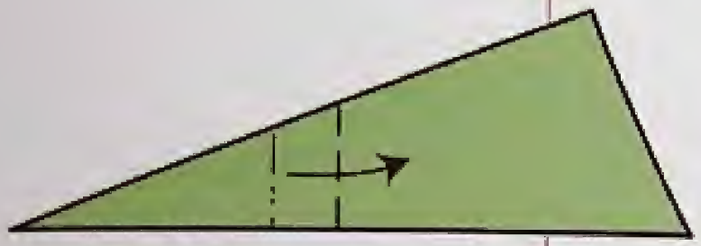
1 Make a pre-crease where the reverse fold will be.

2 Peel apart the papers and wrap them around.

3 The completed fold.

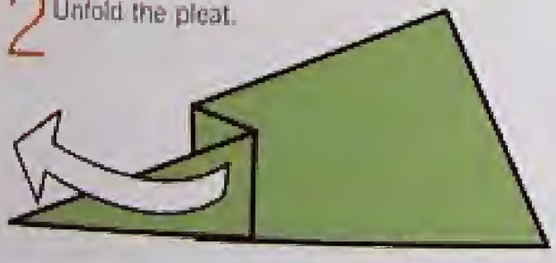


Double reverse

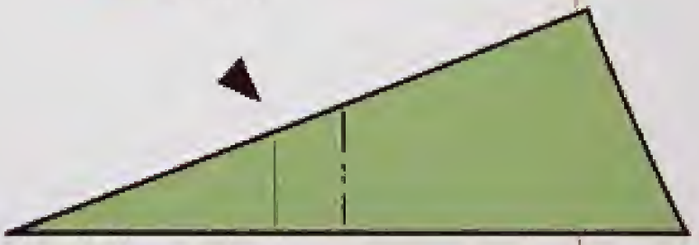


1 Form a pleat to mark the position of the reverses.

2 Unfold the pleat.



3 Sink the point inside the layers.



4 Reverse the inner point back out using the existing creases.

5 The completed fold.

KEY TO SYMBOLS

direction paper moves

fold and unfold again

fold and unfold again

repeat once

repeat three times

fold point to point

push/press

pleat fold

fold behind

turn over

rotate 90 degrees

rotate 180 degrees

pull out paper

scale increases

equal distances

valley fold

mountain fold

hidden fold

existing crease

fold with feeling

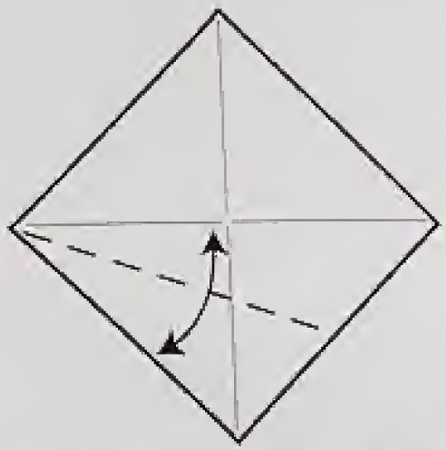
ESSENTIAL SEQUENCES

Certain sequences of folds occur regularly throughout origami and have been given names to make life easier. They allow us to give broad instructions that save time and detail. To break these instructions (and other techniques) down into individual steps every time they were used would mean that origami diagrams would be much longer. By using this form of 'shorthand' we can present a lot of information in a few words.

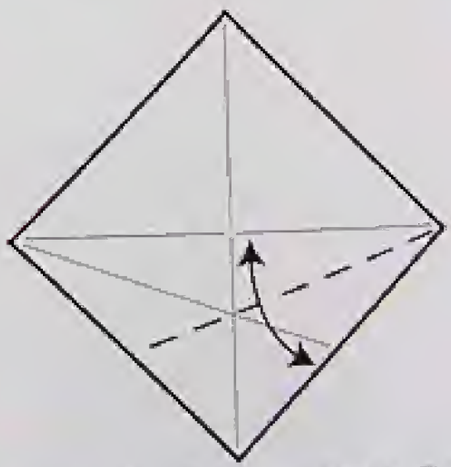
It is important not only that you can perform these sequences, but also that you understand exactly what is happening. To achieve this, you should unfold and refold each sequence until you are clear exactly how the paper is behaving, which flaps move to where and if you need to take extra care at any stage. Some sequences put stress on the paper and careless folding can cause a rip!

RABBIT'S EAR

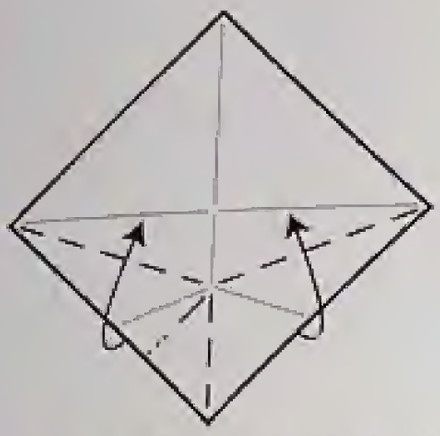
This sequence folds two adjacent sides together, pinching the corner into a flap that can be flattened to either side. It doesn't especially resemble the ear of a rabbit, but that's what it's called. The move appears in various forms throughout origami and is a very useful technique. Here, it is shown formed from one side of a square. If you perform the move on both sides of the paper, you will create a fish base (see page 30).



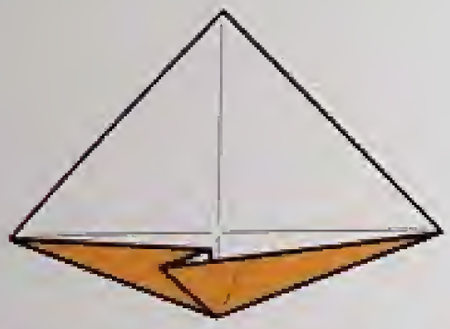
1 Start with a square, creased on both diagonals. Fold the lower left edge to meet the horizontal diagonal. Crease and unfold.



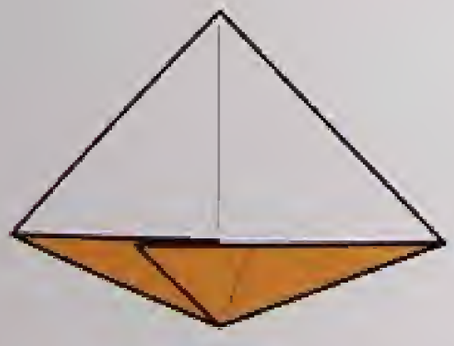
2 Repeat the fold on the lower right edge. These creases need only be made as far as the vertical diagonal, but are shown here complete for ease of folding.



3 Now fold in both sides together, forming a valley fold in the centre. The small mountain fold forms itself as you start to flatten the point later.



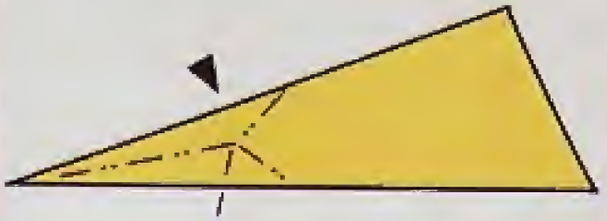
4 Here is the move in progress: the triangular flap is being flattened to the left.



5 Fully flattened – the completed rabbit's ear.

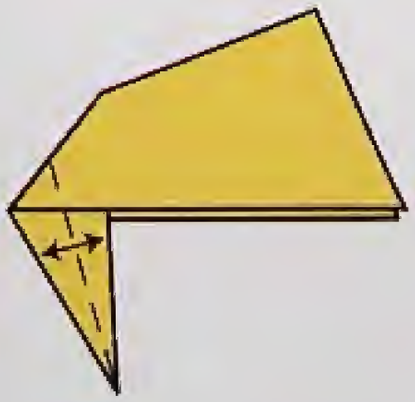
DOUBLE RABBIT'S EAR

This is an elegant sequence that narrows part of a flap while at the same time changing its angle. This fold doesn't at first seem related to the rabbit's ear, but if you open up the flap after performing the technique, you'll see rabbit's-ear creases on either side.

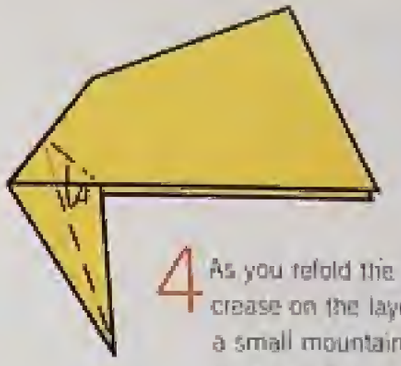


1 This is how the move is usually shown (without an explanation of how to do it).

2 Start with a standard inside reverse.



3 Crease the flap in half.



4 As you refold the valley crease on the layer, add a small mountain crease so that you can tuck the top end of the first layer inside.

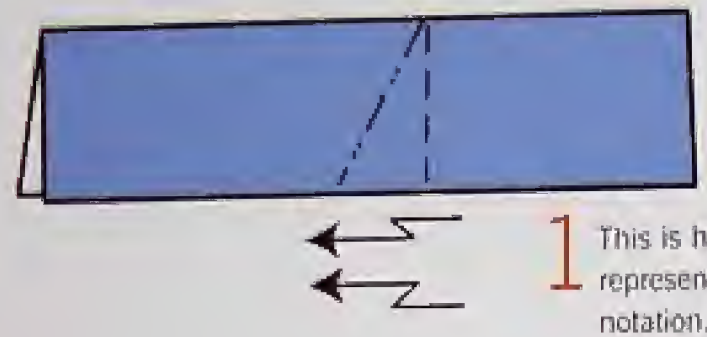
5 One side complete. Repeat on the flap underneath.

6 The move is complete.

CRIMP

A crimp allows you to create a change of angle in a strip or pointed flap. The paper that is 'lost' in the fold lies either inside or outside the rest of the paper, determining whether it is an inside or outside crimp. Once you understand the procedure, crimps can be made directly into the paper, but for accuracy it is usual to pre-crease them. To do this, fold all layers with a mountain and valley fold as shown. It doesn't matter which is which, since you need to reverse the directions of half the creases anyway.

Inside crimp

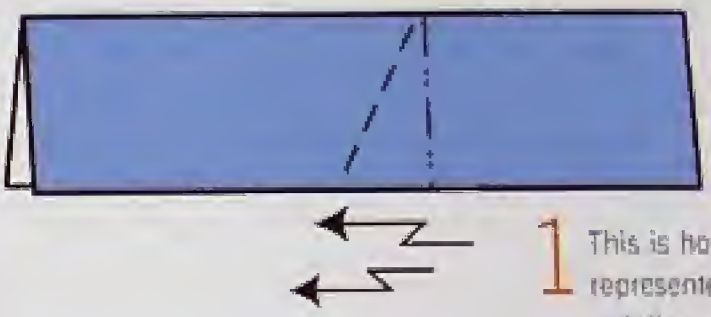


1 This is how the crimp is represented in shorthand notation. The paper on the right will be folded within the paper on the left. The pattern of creases is identical on the layer underneath.

2 Here, the creases are being put into place on both sides of the paper.

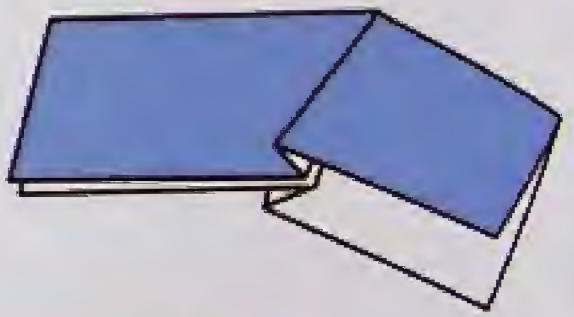
3 The completed crimp.

Outside crimp



1 This is how the crimp is represented in shorthand notation. This is the opposite to the inside crimp. Here, as you would expect, the paper moves outside. The pattern of creases is identical on the layer underneath.

2 Here, the creases are being put into place on both sides of the paper.

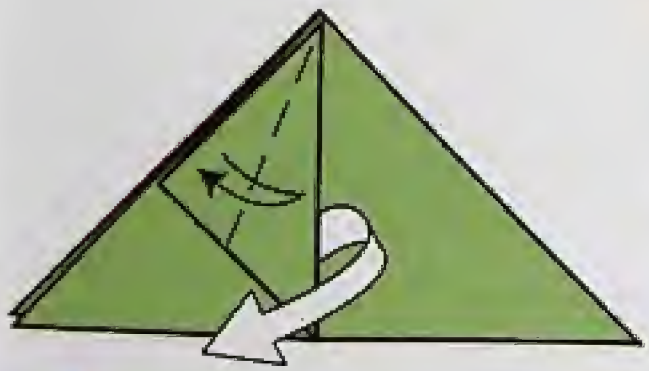


3 The completed crimp.

PETAL

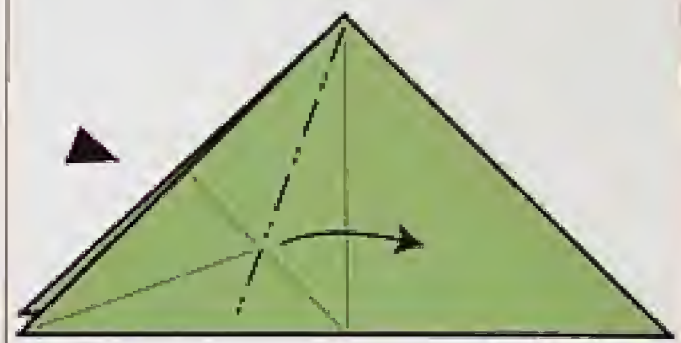
One of the classic sequences in origami, a petal involves folding several creases at the same time to produce a neat and unexpected result. While experienced folders can make a petal fold directly into the paper, it's much easier if you add the necessary pre-creases first.

1 This example begins from a waterbomb base (see page 29). Fold the bottom-left corner to the top corner.

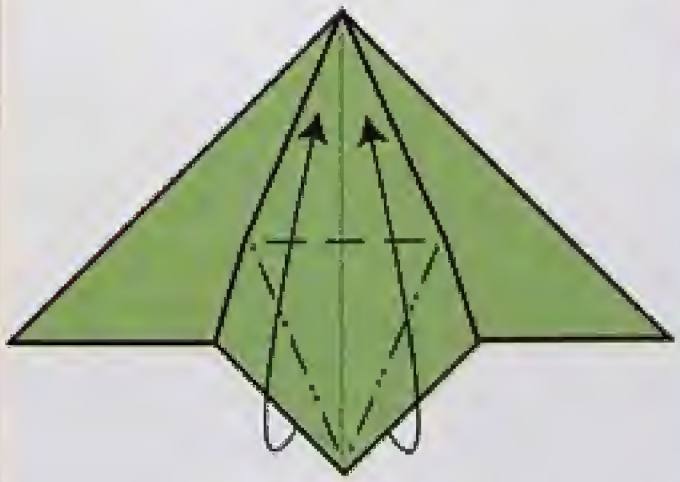


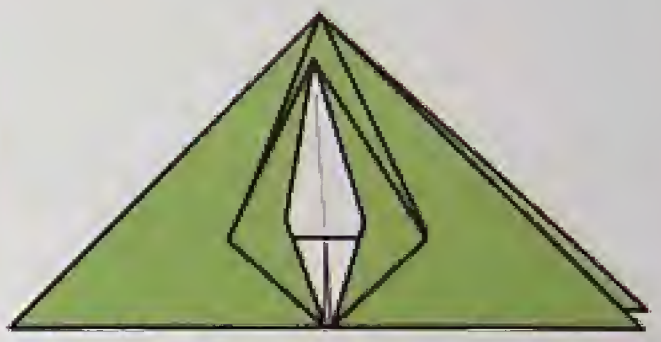
2 Fold the top two shorter edges to the centre crease, then unfold back to Step 1.

3 You now have all the creases you need to make the petal fold. Squash the flap symmetrically in half.

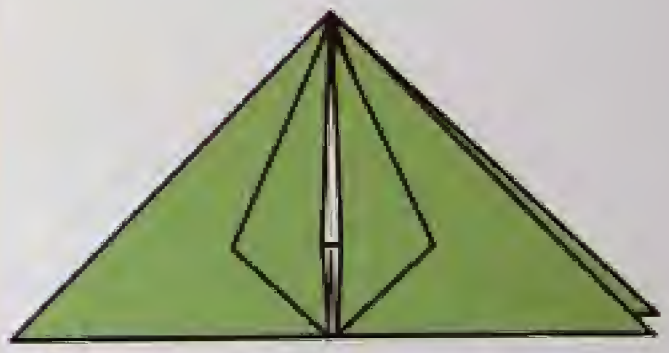


4 Using the horizontal crease as a hinge, swing the lower point upwards. The lower raw edges will start to fold inwards.





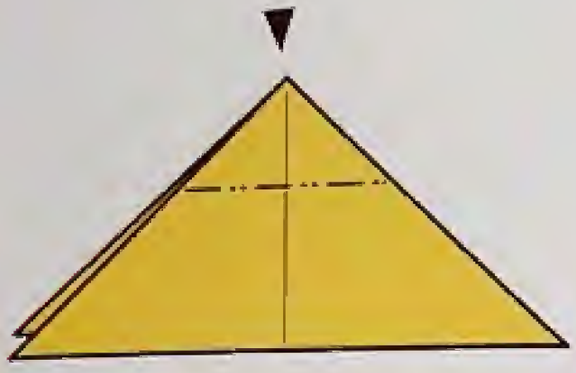
5 Here is the move in progress.



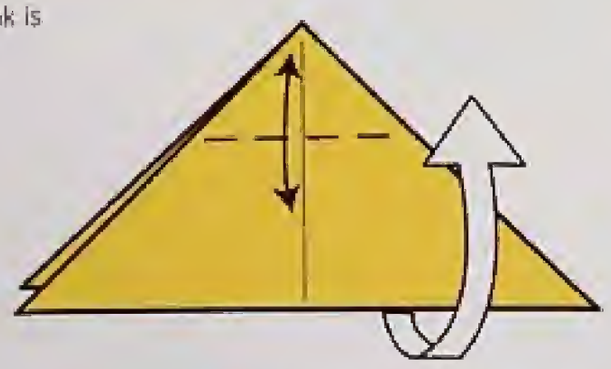
6 And completed. Unfold and refold until you understand what is happening. If you do this to each of the flaps, you will form a frog base.

SINK

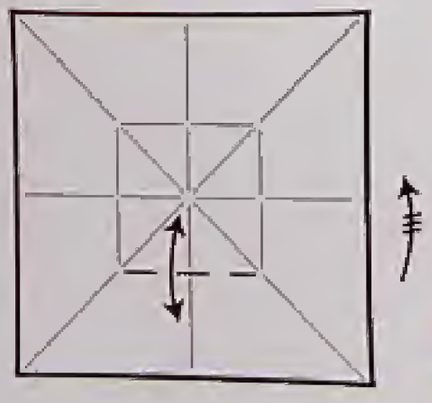
A sink is typically applied to a 'closed' corner point (i.e. one formed with folded edges only). The section of paper above the sink line disappears completely into the paper. Like reverse folding, this is a technique that often confuses beginners, but it shouldn't present a problem if you pre-crease accurately and fold carefully. The hard part is to get the creases inside the sink to lie neatly. If you are folding foil paper, this can be almost impossible. (You may be lucky enough to come across a double sink, where the paper goes in, then comes partially out again!)



1 This is the way a sink is usually indicated.

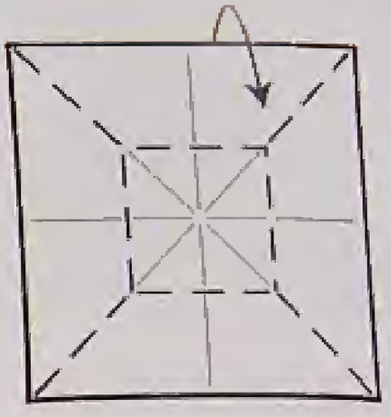


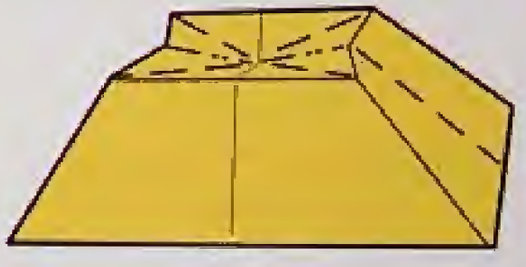
2 Pre-crease a valley where the 'sink line' will be. Open the paper out to the white side.



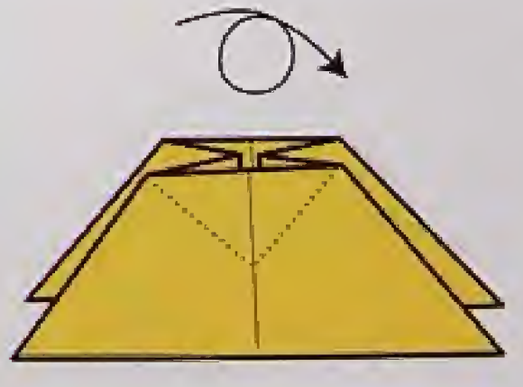
3 Change all similar creases to valleys, where necessary.

4 Form the paper into a 3-D shape, turning it upside down.





5 Start to press in the centre. Whether a crease on the outside is a valley or a mountain, make sure that it is the opposite on the inside. So, for example, the outside section from the corner is a mountain, but as it passes the sink line it becomes a valley. Fold carefully and don't force the paper.

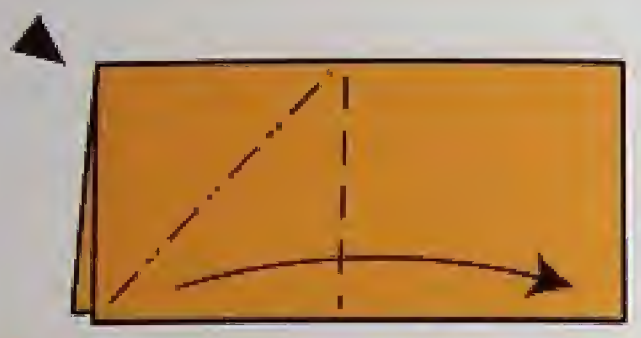


6 Complete the sink.

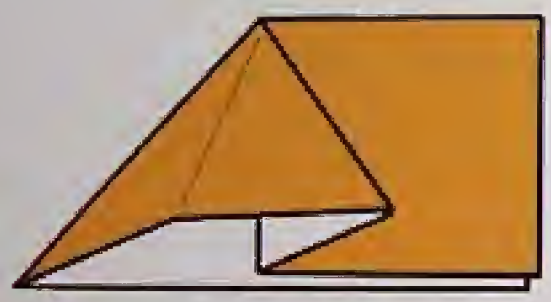
SQUASH

This term describes the technique of lifting a double layer of paper and squashing the layers apart as you flatten them. If you can't see anything to line up with the fold, you may need to turn the paper upside down before the final flatten. You should initially pre-crease both creases involved (the mountain crease can go either way during pre-creasing, but the valley crease should be pre-creased as a valley). With practice, you can sometimes form squashes directly, without pre-creasing. No method of forming a squash is better than another, it depends entirely on what the origami design requires.

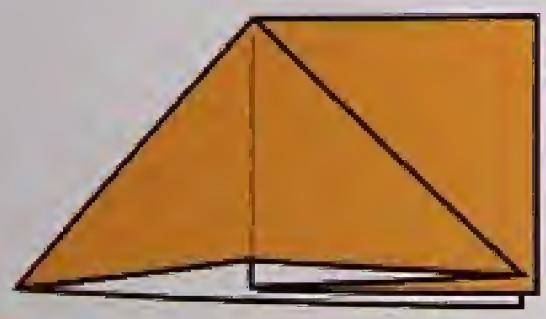
Method 1



1 This is how the squash is shown. Swing the paper over on the valley, while pressing the corner shown.

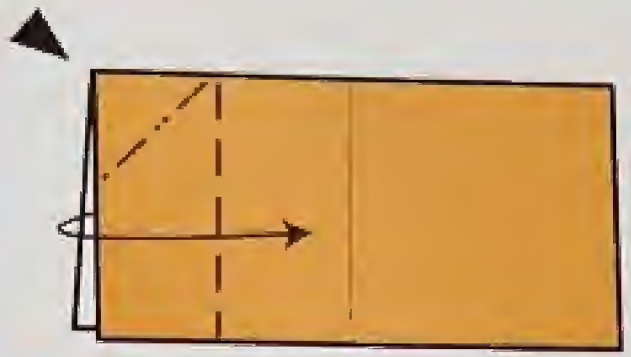


2 The fold in progress.

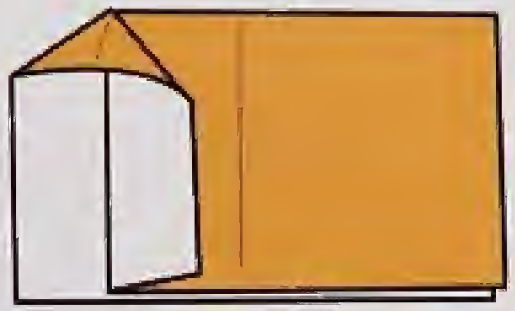


3 With luck, the paper will settle in this position.

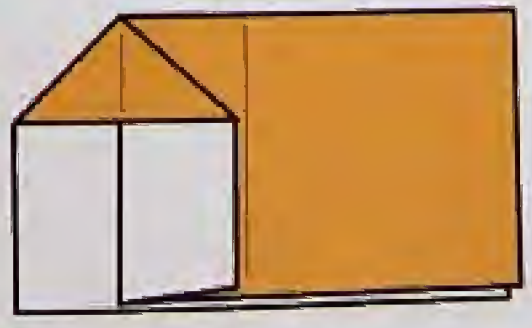
Method 2



1 This is almost the same as the first example, but it's applied to a shorter flap of paper.

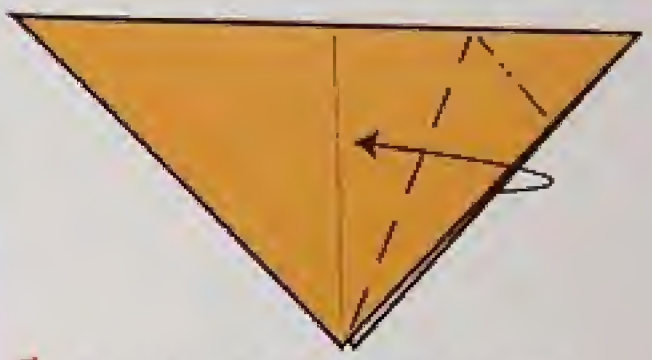


2 The fold in progress.

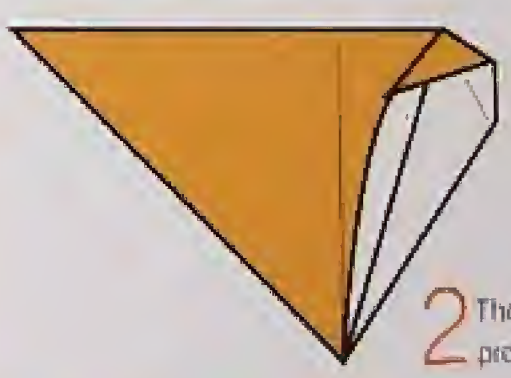


3 This is the completed fold.

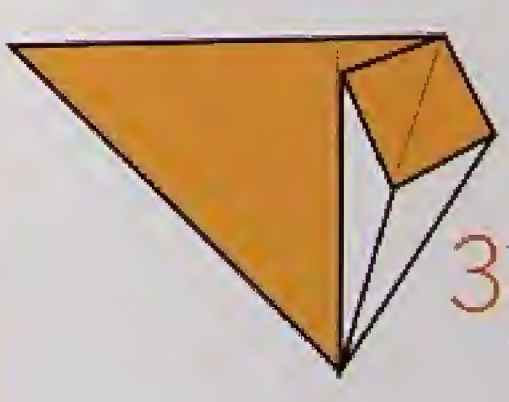
Method 3



1 This looks quite different to the other two squash examples, but the same principles apply. In this instance you may only want to pre-crease the valley fold, since you're not sure where the other crease will lie.



2 The fold in progress.



3 The completed fold.

KEY TO SYMBOLS

direction paper moves

fold and unfold again

fold and unfold again

repeat once

repeat three times

fold point to point

push/press

pleat fold

fold behind

turn over

rotate 90 degrees

rotate 180 degrees

pull out paper

scale increases

equal distances

valley fold

mountain fold

hidden fold

existing crease

fold with feeling

BASES

When creative people began to analyse origami in the early part of the last century, they noticed that several designs began with an identical sequence of folds. These came to be known as bases and were given names that usually reflected a design commonly made from them. Thus a base that could be made into a fish was called a fish base and so forth. One exception is the preliminary base, so-called because it is a starting point for many different designs.

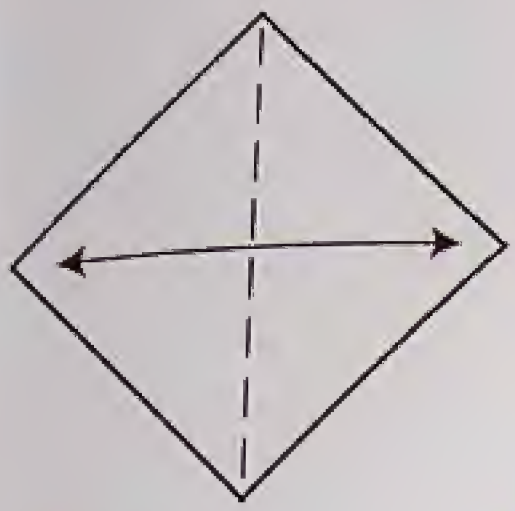
The beauty of a base is that it forms a starting point for you to be creative. Faced with a plain square, people often find it difficult to progress, but given (for example) a bird base, they can play with the many possibilities and perhaps come up with a new design. Needless to say, a thorough grounding in traditional bases will help you towards success in origami.

KITE BASE

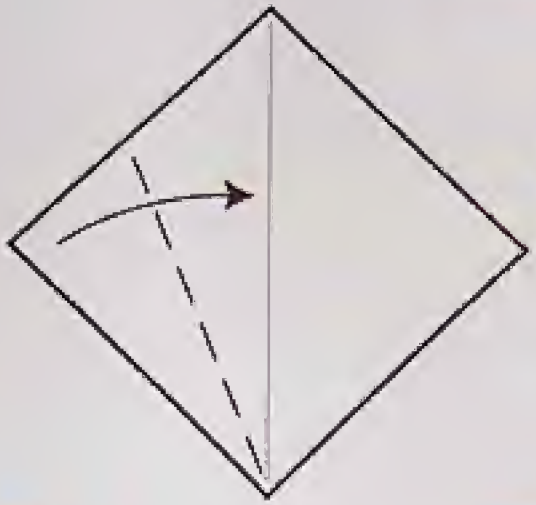
Probably the simplest of origami bases, the kite allows you to create uncomplicated designs, such as pecking birds and owls. Although this is a very simple base, it still needs folding carefully and accurately. It's interesting to see how this base is developed into a fish base (see page 30).

BLINTZ BASE

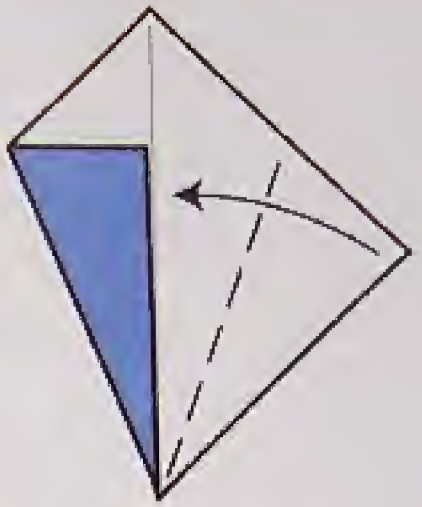
This base is formed by folding each corner of a square to the centre. To find the centre, add any two of the 'union jack' creases (diagonal or side-to-opposite creases). However, folding to the centre can sometimes lead to inaccuracies: it's always easier to fold to an edge rather than a crease line. The method opposite is an excellent way of folding a very clean (minimally creased) blintz base. The word blintz itself comes from a way of folding Jewish pastry.



1 Crease a diagonal.

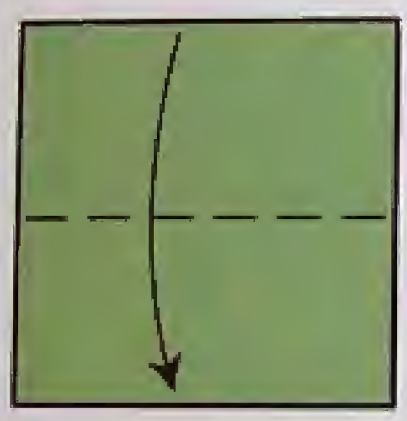


2 Fold one of the sides to lie along the diagonal.

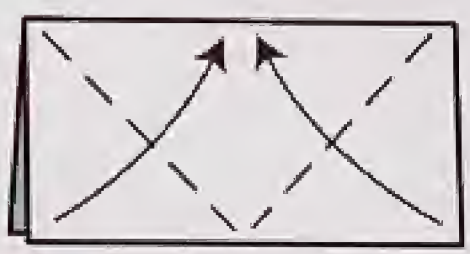


3 Repeat on the other side.

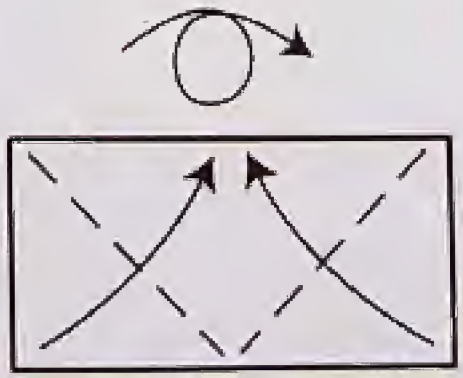
4 The completed kite base.



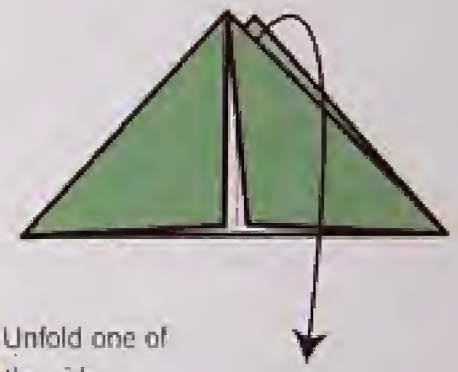
1 Fold a square in half.



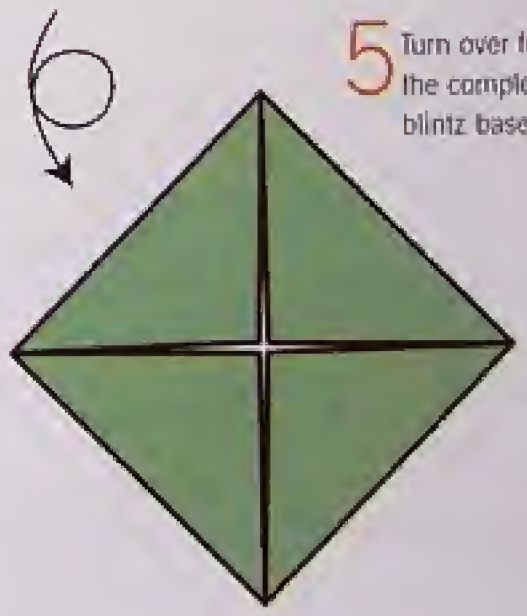
2 Fold the two shorter edges to meet the top edge.



3 Turn the paper over and repeat the last step.



4 Unfold one of the sides.

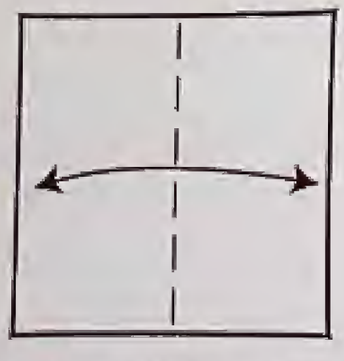


5 Turn over for the completed blintz base.

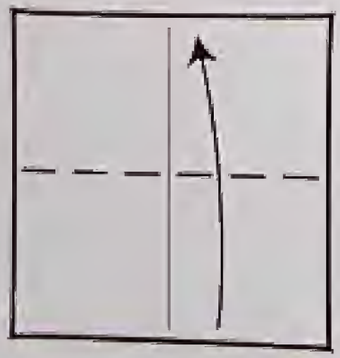
PRELIMINARY BASE

This is called the preliminary base because it is the starting position for many origami designs. It's well worth studying this base carefully so you can see how a precise combination of valley and mountain creases is needed to form it. If any of these creases are made incorrectly, it simply won't work. This base also exemplifies an origami technique that produces many points where there were few. The four corners of the square produce nine (count them!) points with which you can work.

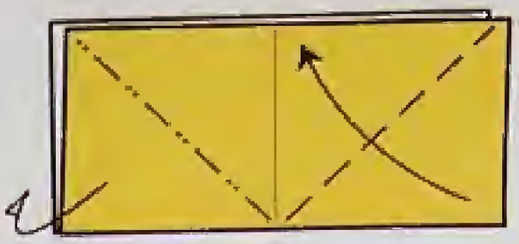
Method 1



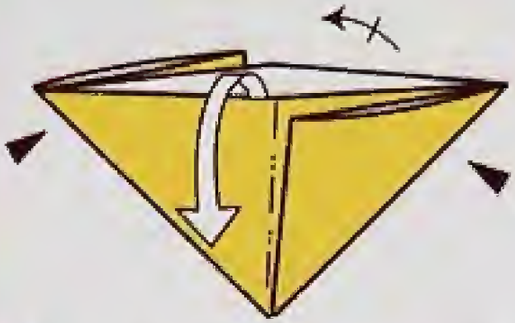
1 Fold a square in half from side to side, crease and unfold.



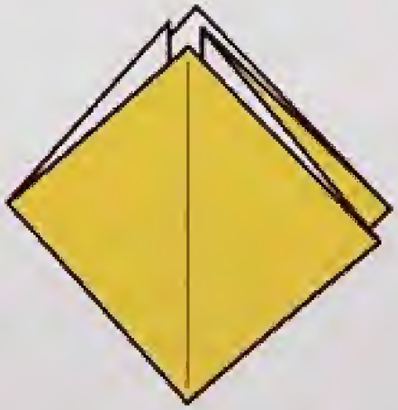
2 Fold the square in half from bottom to top.



3 Fold the bottom-right corner to the top centre. Turn over and repeat the fold on the other side (shown here as a mountain fold).

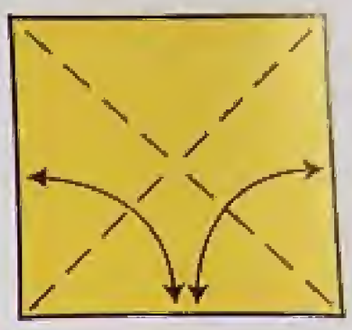


4 Open the layers evenly and press the sides together, in effect squashing the model in half.

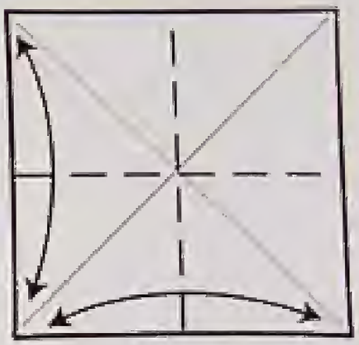


5 A preliminary base is formed.

Method 2

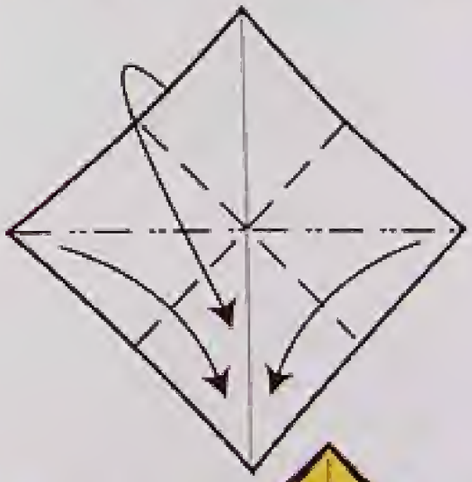


1 Fold both diagonals.

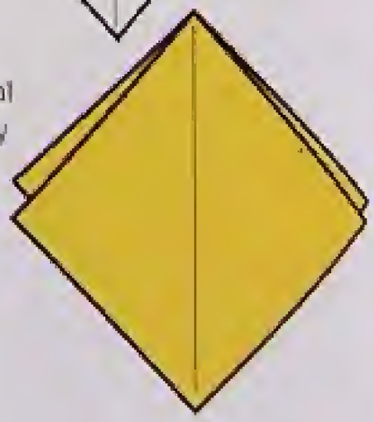


2 Turn over and crease in half both ways.

3 Rotate the paper through 45 degrees. Use only existing creases to collapse the paper.



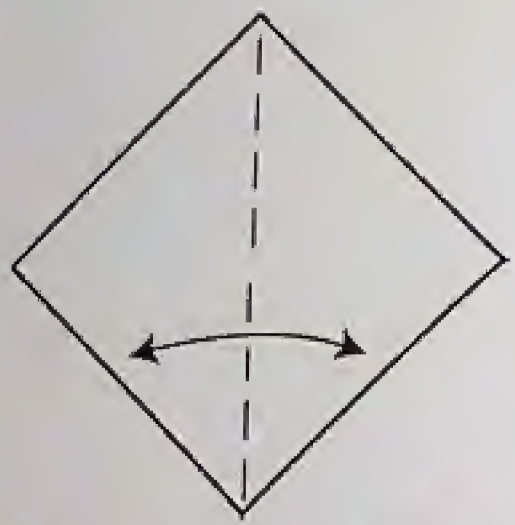
4 An identical preliminary base.



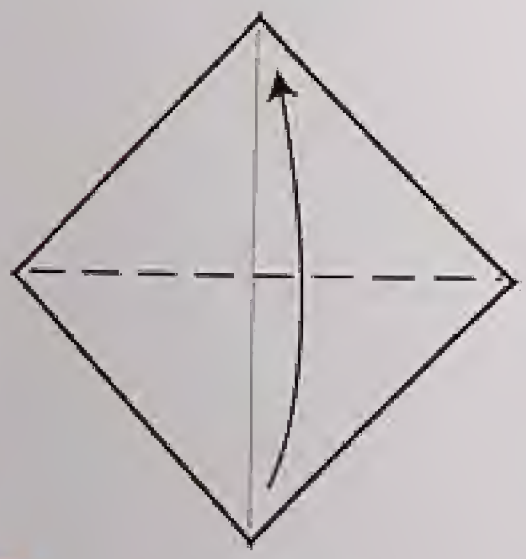
WATERBOMB BASE

It's hard to see at first, but the crease pattern for the preliminary base is the same one needed for the waterbomb base. This means you can take a preliminary base and flip it inside out to form a waterbomb base. However, the two methods shown for the preliminary base can also be easily adapted to form the waterbomb base directly.

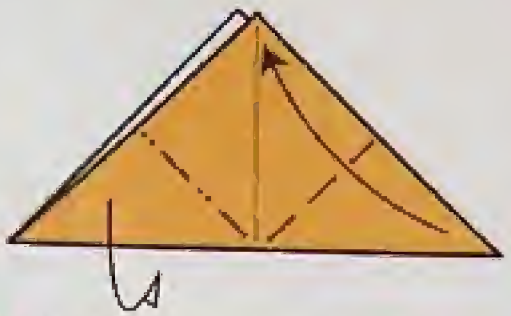
Method 1



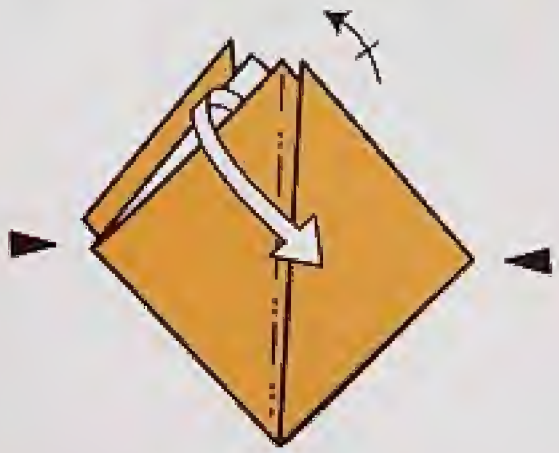
1 Fold a square from corner to opposite corner, crease and unfold.



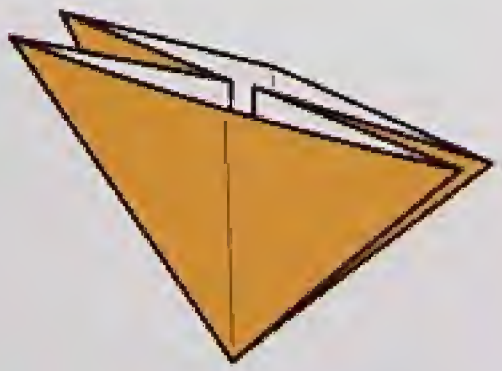
2 Fold in half from bottom to top.



3 Fold the bottom-right corner to the top centre. Turn over and repeat the fold on the other side (shown here as a mountain fold).

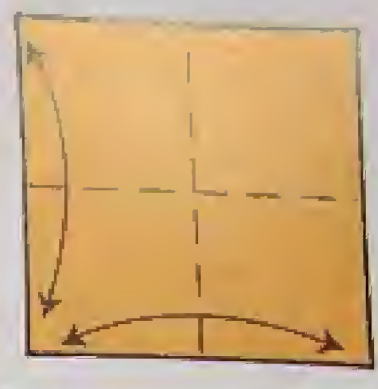


4 Open the layers evenly and press the sides together, in effect squashing in half.

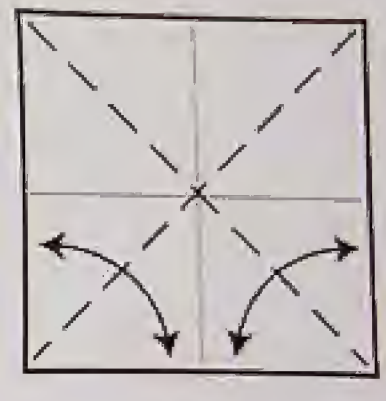


5 A waterbomb base is formed.

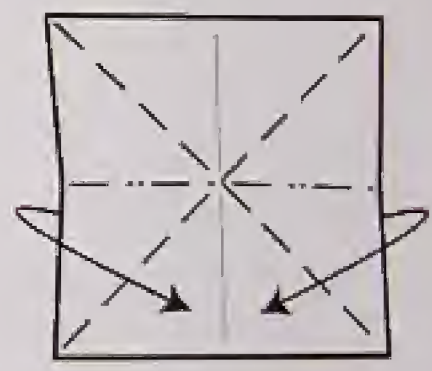
Method 2



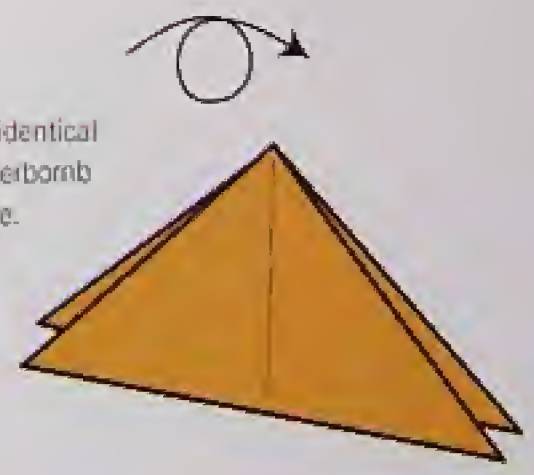
1 Crease the square in half both ways.



2 Turn over and crease both diagonals.



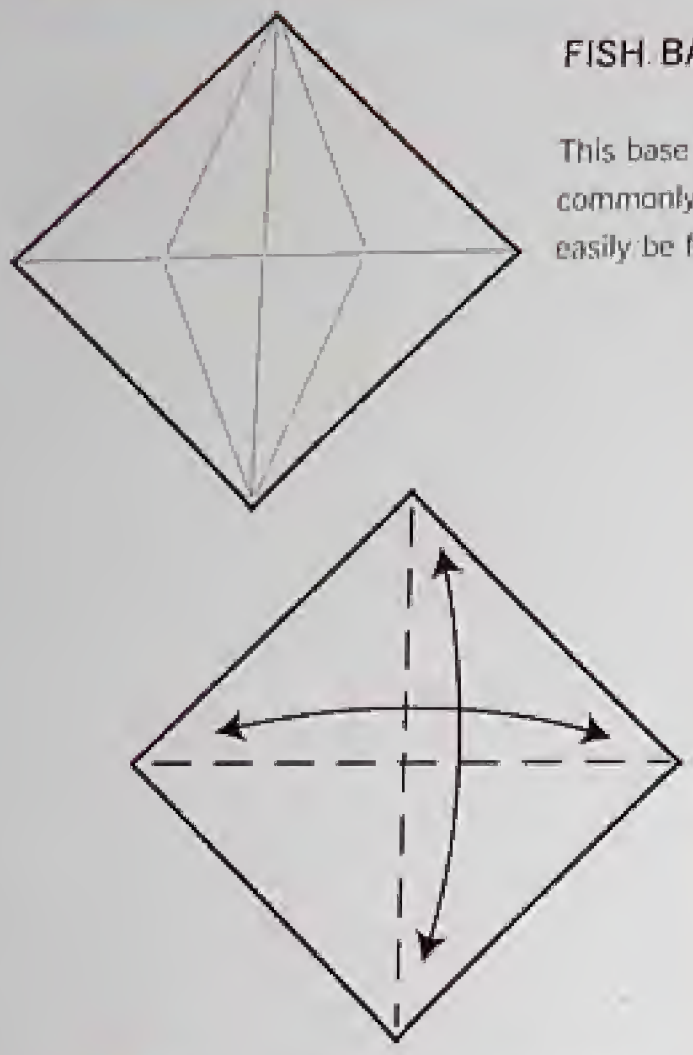
3 Use only existing creases to collapse the paper.



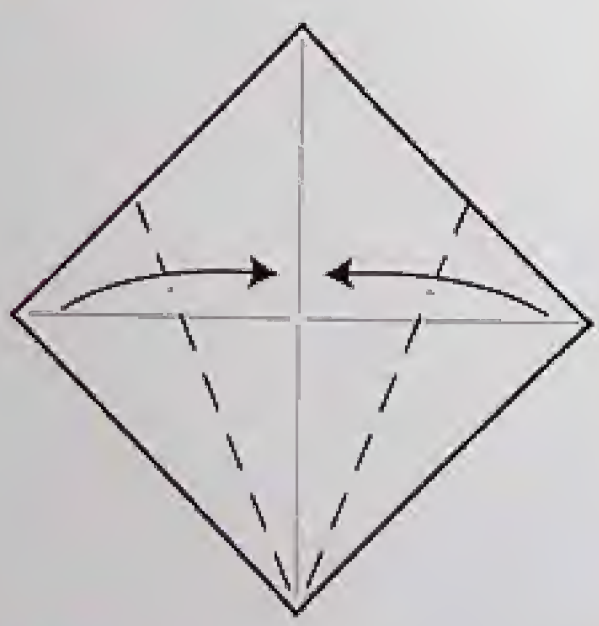
4 An identical waterbomb base.

FISH BASE

This base produces an extended diamond shape with two smaller flaps at the centre. It is commonly folded in half to form a kite shape with two layers. The tips of these layers can easily be folded over to form the fins of a simple fish.

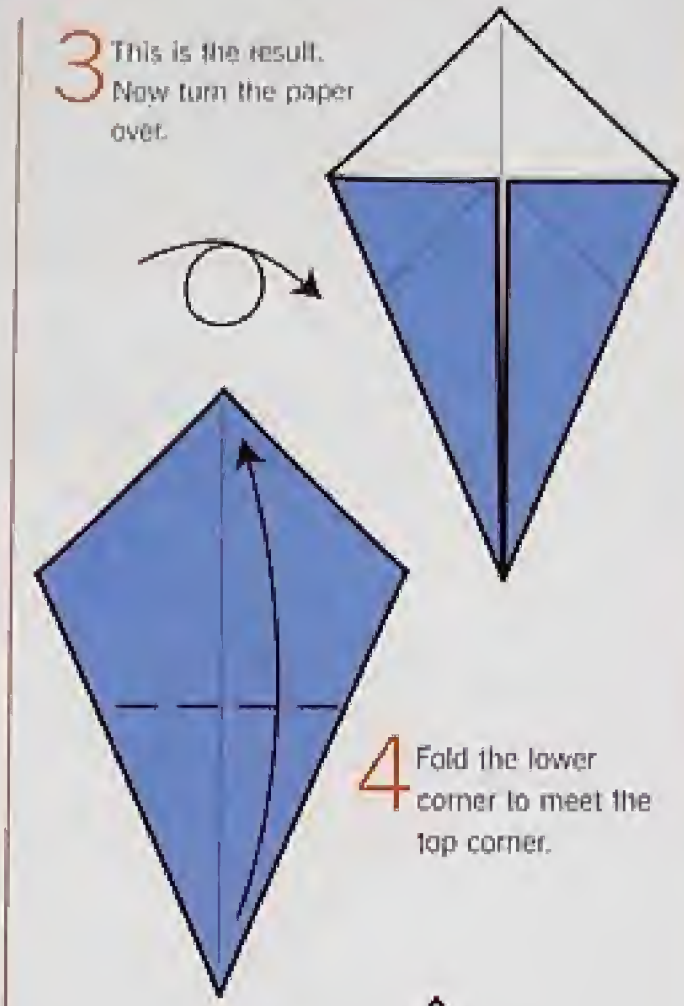


1 Crease both diagonals from the white side.

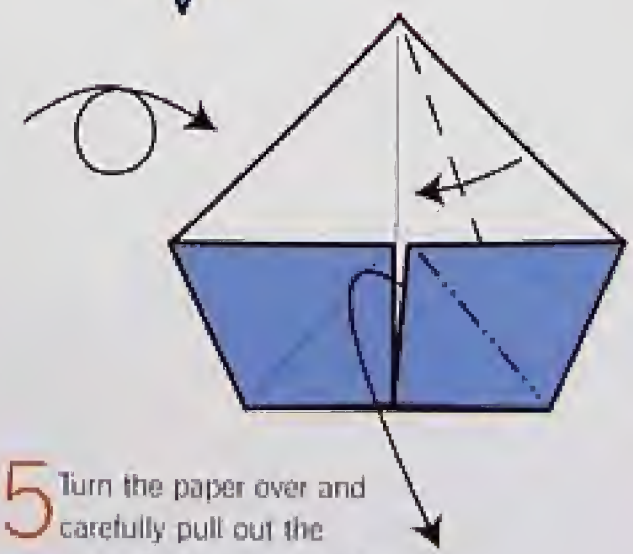


2 Fold the two lower raw edges to the vertical centre crease.

3 This is the result. Now turn the paper over.

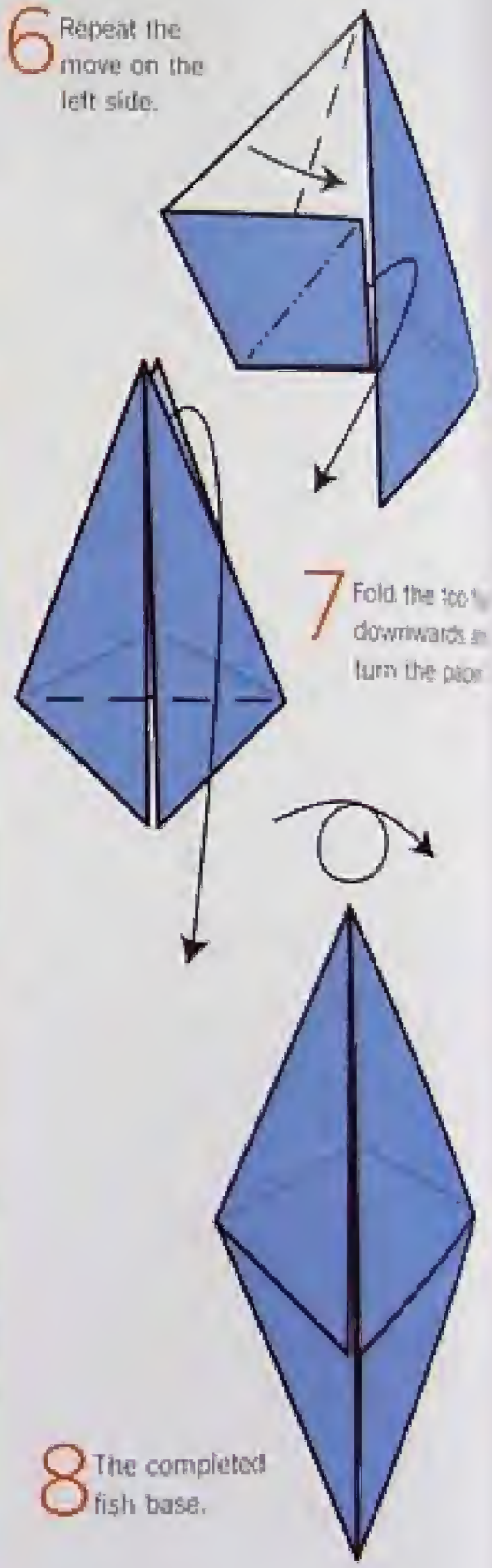


4 Fold the lower corner to meet the top corner.



5 Turn the paper over and carefully pull out the original right-hand corner to form a point. The right raw edge will move to the centre vertical crease.

6 Repeat the move on the left side.

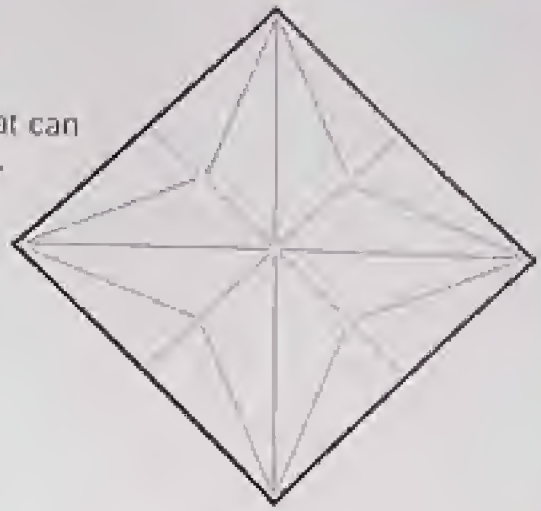


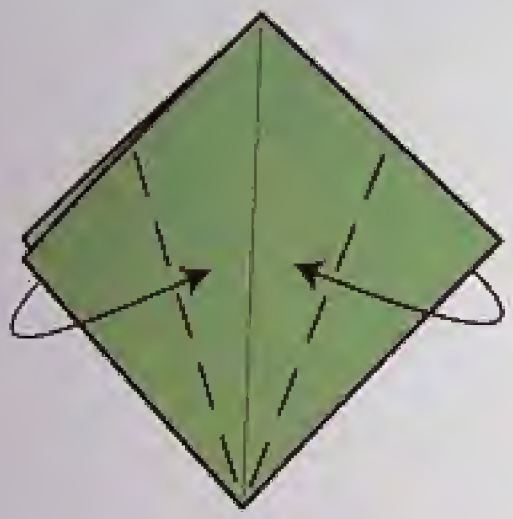
7 Fold the top downwards and turn the paper

8 The completed fish base.

BIRD BASE

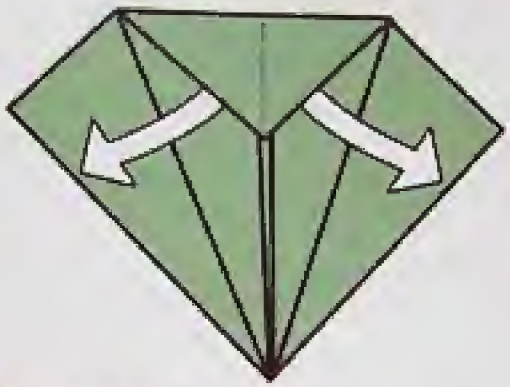
A bird base is so-called due to the number of birds that can easily be folded from it. The bird base has four narrow points at one end and a blunter one at the opposite end. Its crease pattern (right) shows a perfect and beautiful symmetry.



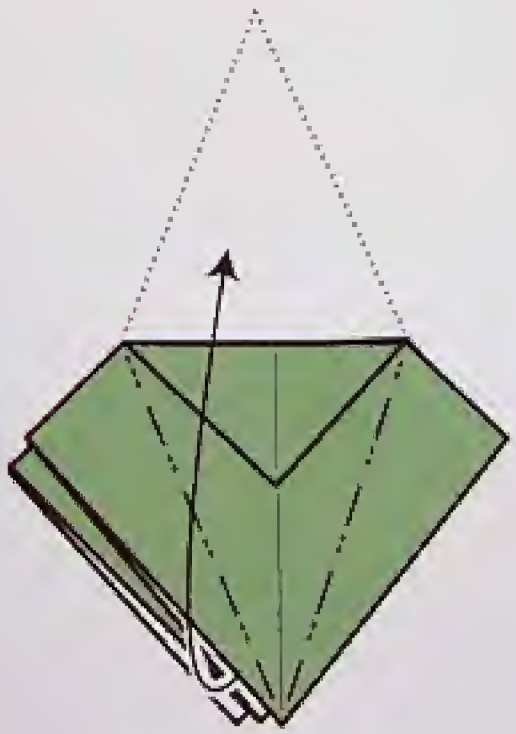


1 Start with a preliminary base, coloured side outwards. Fold two outer flaps in to the vertical centre crease.

2 Fold the top triangular flap downwards.

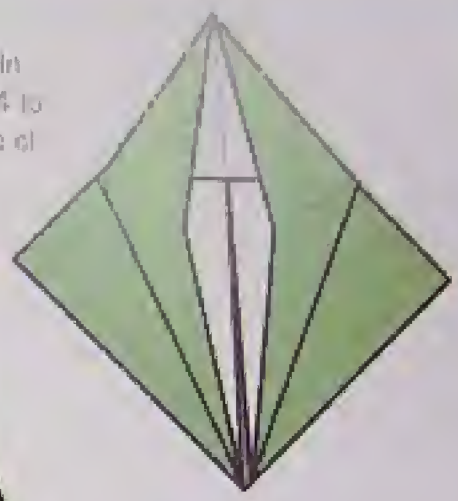


3 Pull the side flaps out from beneath the top flap.

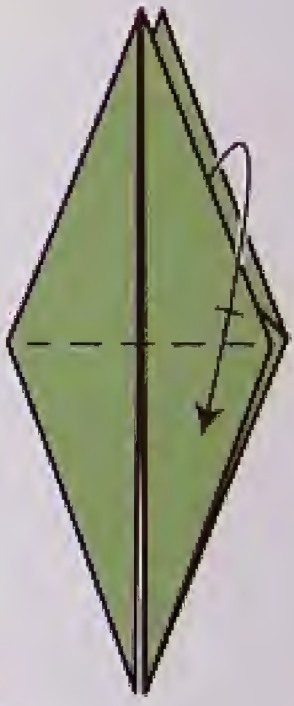


4 Lift the corner of the first layer of paper at the bottom and swing it upwards, using the top of the triangular flap as a hinge.

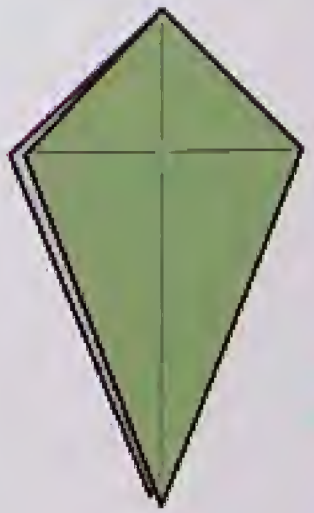
5 This is the move in progress. (Steps 4 to 5 are an example of a petal fold.)



6 The move is completed. Now repeat all the steps on the flap behind.



7 This is one completed form of the bird base, but, very often, the two upper points are folded downwards.

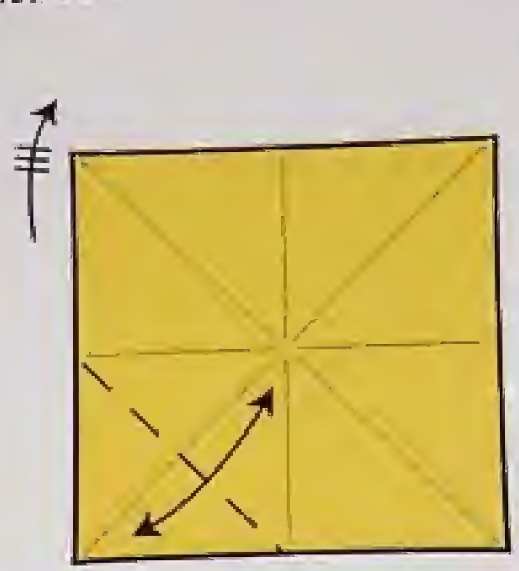


8 The classic form of the bird base.

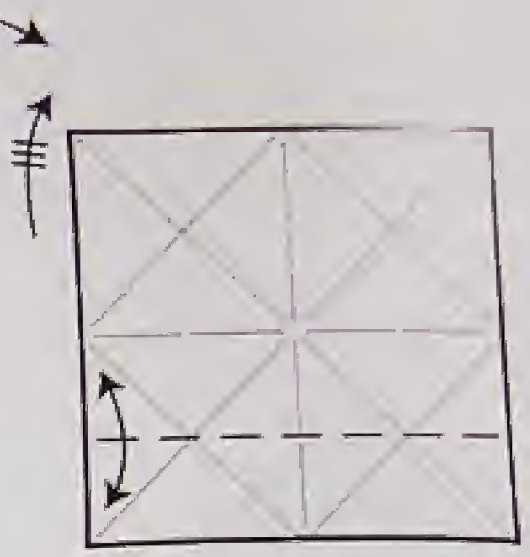
MULTIFORM BASE

Just by playing with the existing creases, this base can be used to create quite a few simple models. It's also known as a windmill base, for obvious reasons! Two methods for making a multiform base are shown here. The first allows you to be very precise and put in all the creases you need in advance, while the second is more of a scenic route. Use whichever approach you enjoy most.

Method 1

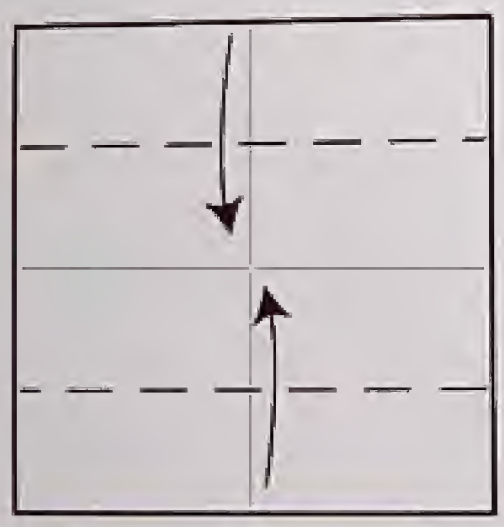


1 Start with a square with both diagonal and side-to-side creases. Fold each corner to the centre. (Note the use of the repeat arrow.)

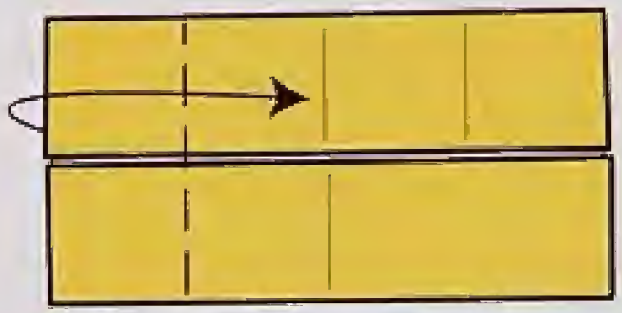


2 Fold each side in to the centre, crease, and unfold.

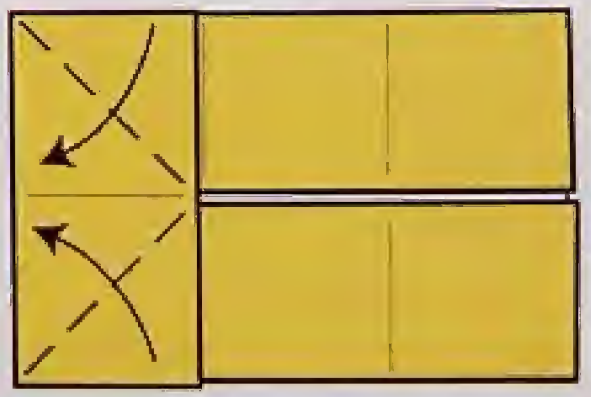
Method 2



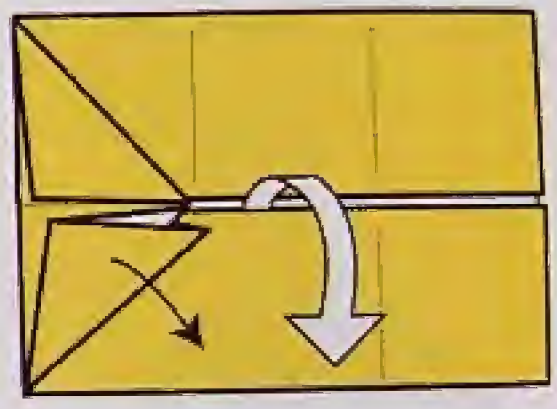
1 Start with a square, creased side-to-side both ways. Fold opposite sides in to the centre.



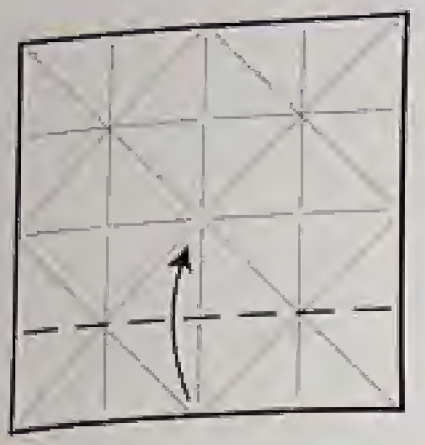
2 Fold the left-hand edge to the centre.



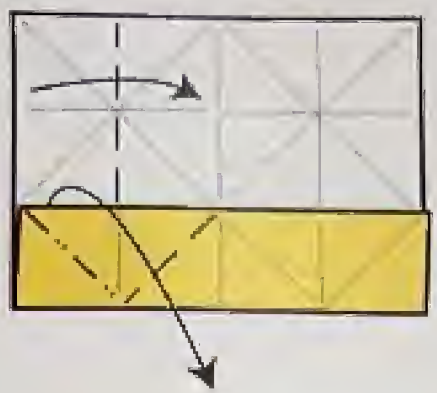
3 Fold the two corners shown to the centre of the left-hand edge.



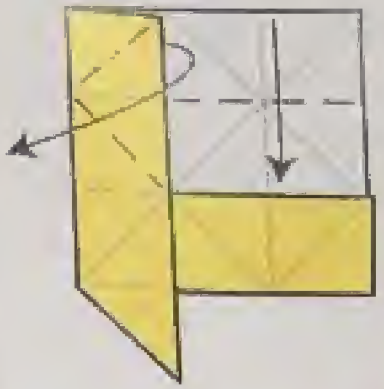
4 Carefully separate the layers of paper on the corner shown and ease the lower layer out. Allow the paper to refold neatly. This should be a natural movement – don't force it.

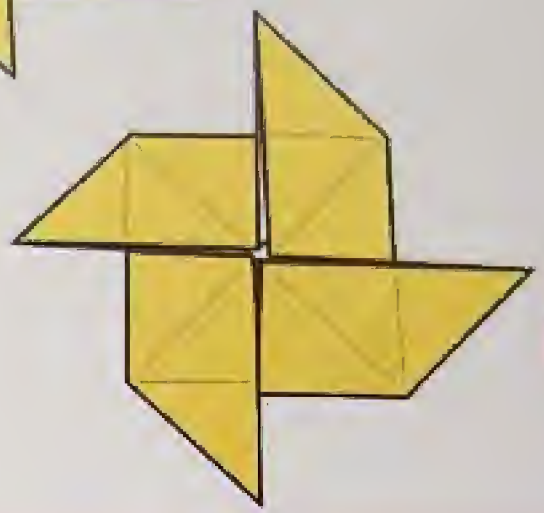


3 Refold one side to the centre.

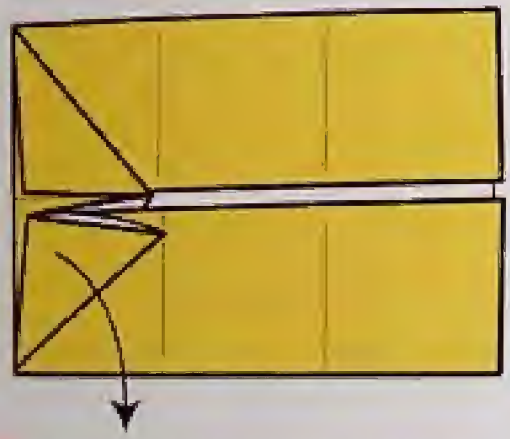


4 Use the creases shown to form a corner point.

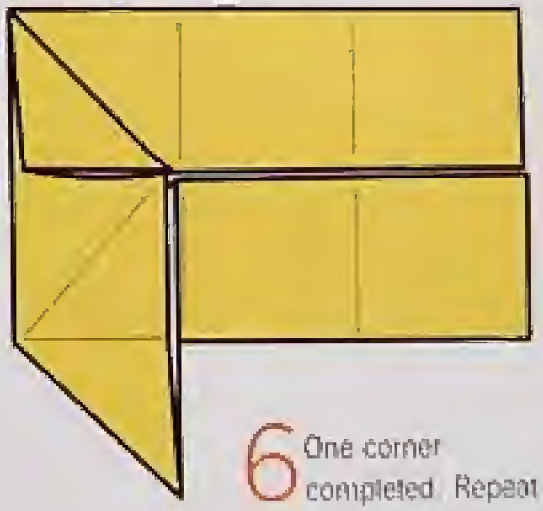




6 All four corner points formed.

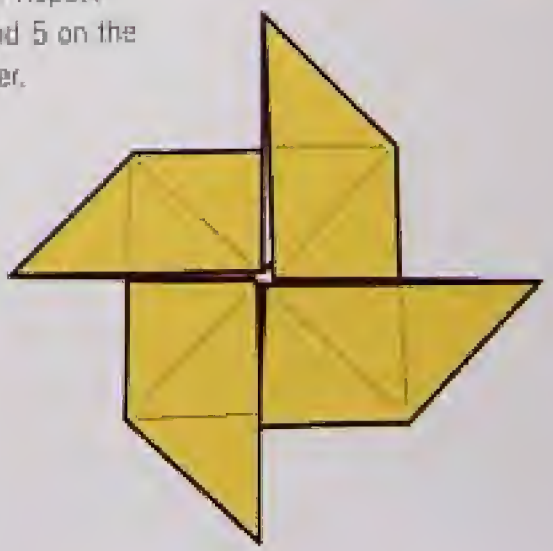


5 You can now extend the flap downwards. Repeat on the upper left corner, then repeat all steps on the right-hand end.



6 One corner completed. Repeat Steps 4 and 5 on the other corner.

7 Then repeat Steps 2 to 5 on the right-hand edge to form the multiform base.



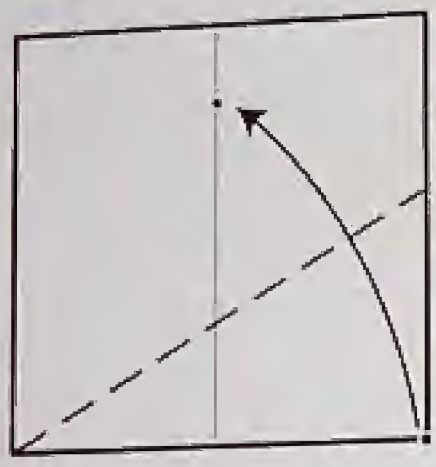
CHALLENGE

There is a good way to pre-crease a multiform base using Huzita folds – can you work it out?

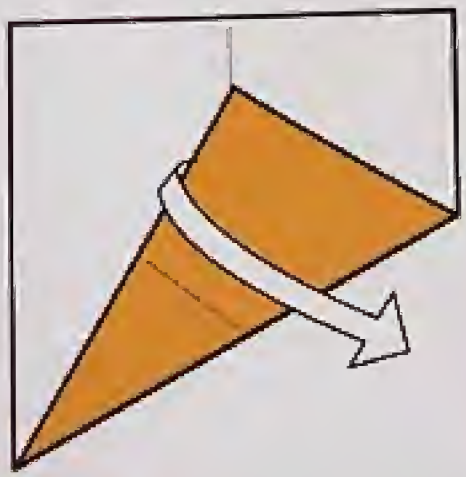
AWAY FROM TRADITIONAL BASES

Most origami makes use of 90-, 45- and 22.5-degree geometry. By using a few ingenious folding techniques, it is easy to create angles of 60 degrees (and hence 30 and 15). This frees you from traditional bases and makes it more likely that you will achieve something genuinely new.

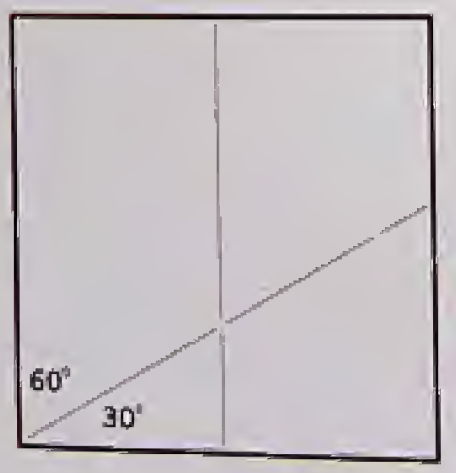
Folding 60-degree angles Method 1



1 Fold a square in half from side to side. Starting your crease at the bottom-left corner, fold the bottom-right corner to meet the vertical crease.

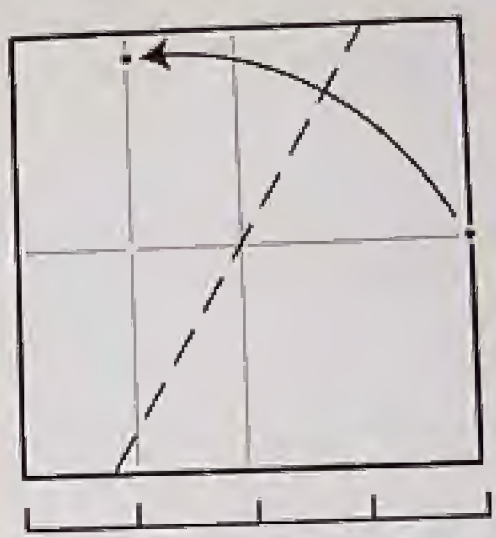


2 The fold should look like this. Now unfold again.

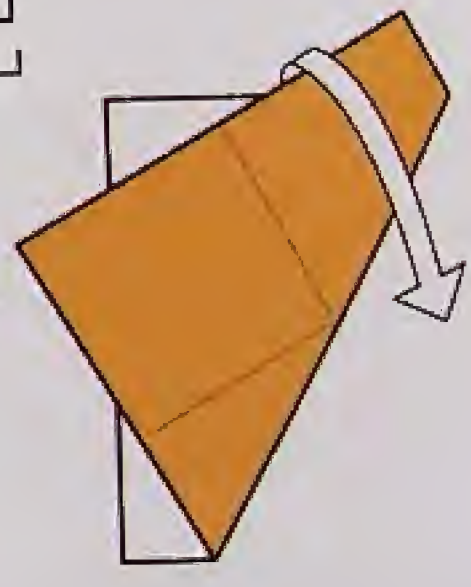


3 You have divided the bottom-left corner into 30- and 60-degree angles.

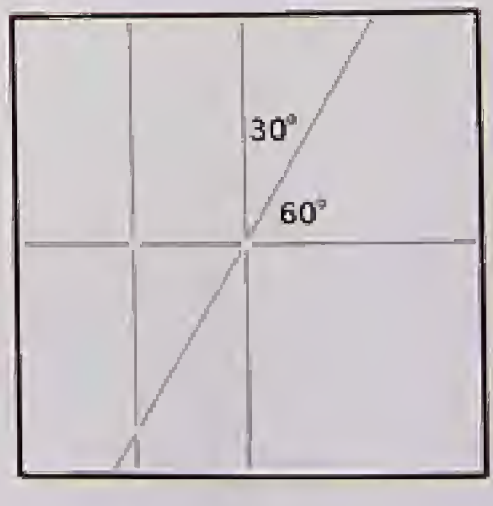
Folding 60-degree angles Method 2



1 Fold a square in half both ways, then add a vertical quarter crease. Passing the horizontal crease through the centre of the paper, make its right-hand end lie somewhere on the vertical quarter crease.

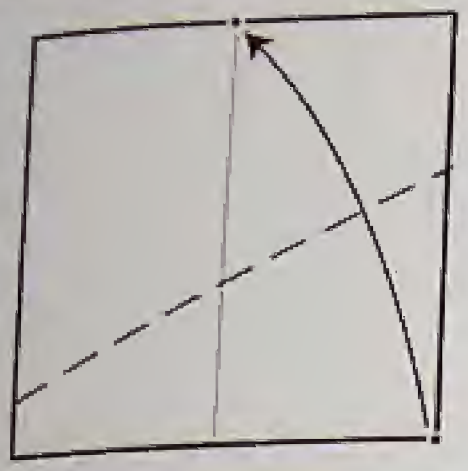


2 The fold should look like this. Now unfold again.

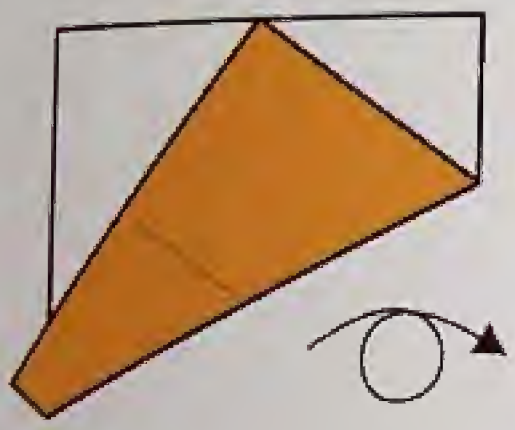


3 The 30- and 60-degree angles now lie at the centre of the paper.

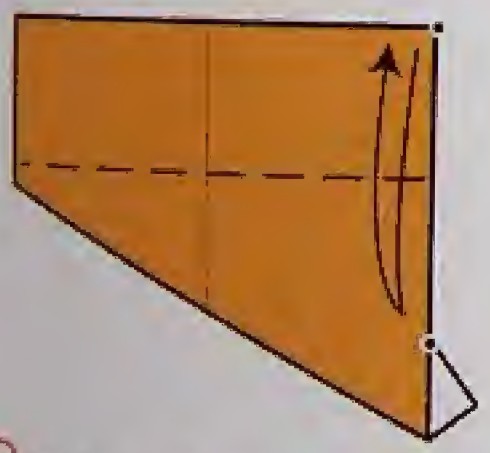
Dividing a square into thirds Method 1



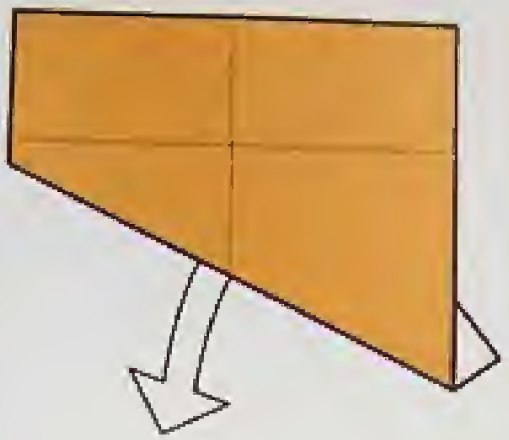
1 Start with a square, folded in half. Fold the bottom-right corner to the top centre.



2 The fold should look like this. Now turn the paper over.



3 Fold the top-right corner to where the two raw edges meet.

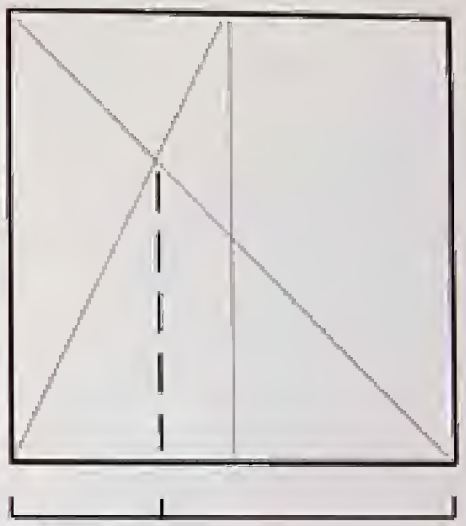


4 Unfold the layer from underneath.

5 You have divided the side into ⅓ and ⅔.

Dividing a square into thirds Method 2

1 Starting with a square, add a vertical halfway crease and a diagonal. Then fold a diagonal in the left-hand half of the paper.



2 Fold a vertical crease that meets the intersection of the two diagonal creases. This divides the lower edge into ⅓ and ⅔.

BEGINNER PROJECTS

Here are some designs carefully selected to introduce you to the symbols and moves that you will need for simple models. They will also show you a small part of the rich diversity of subjects you can fold with paper. To get the best from this book, work through this chapter before tackling any of the more advanced projects!

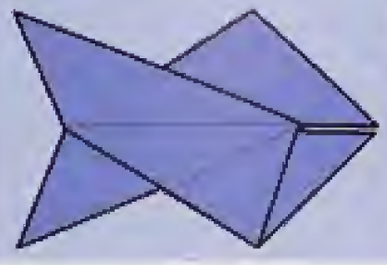
WATERBOMB FISH

Design by various creators

8 STEPS

With one extra crease, the humble waterbomb base transforms into an angelfish. With a couple more, it becomes a traditional fish. These are the types of fold that people discover through playing with the paper, looking for logical folds to make, and using their imagination. With many tens of thousands of folders in the world, it follows that several people are likely to rediscover the same design. While it's always disappointing to find out that your wonderful creation isn't quite as unique as you had hoped, you shouldn't let this upset you too much. The idea came from your own creativity and it's not surprising that you should share similar approaches with other people.

Paper size:
7 in. (18 cm) square
Finished waterbomb fish:
4 in. (10 cm) high



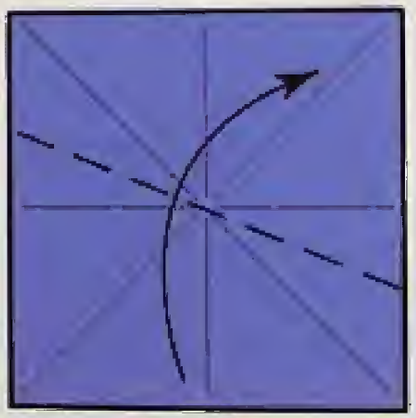
WATERBOMB BASE
REMINDER

1. Fold in half both ways.

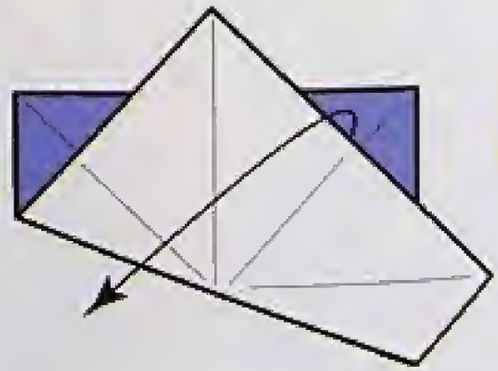
2. Turn over and add both diagonals.

3. Refold using existing creases.

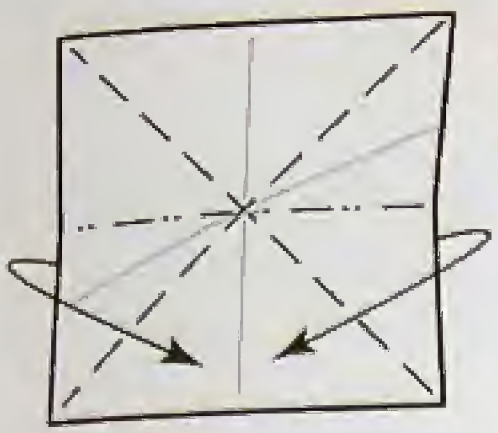
4. Complete.



1 Start with a waterbomb base (see reminder panel, left), folded with the coloured side outwards. Unfold and turn to the coloured side. Make a fold that passes through the centre of the square, arranged so that the lower vertical crease meets the upper right diagonal crease.

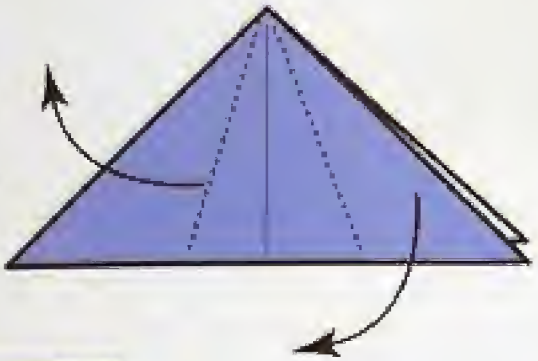


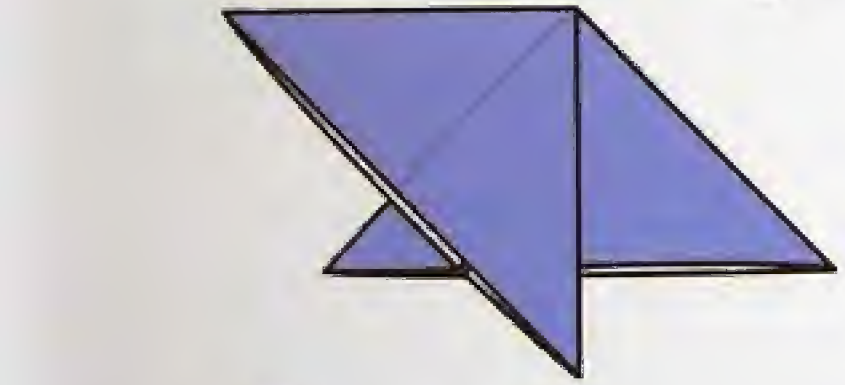
2 This is the result. Unfold the paper

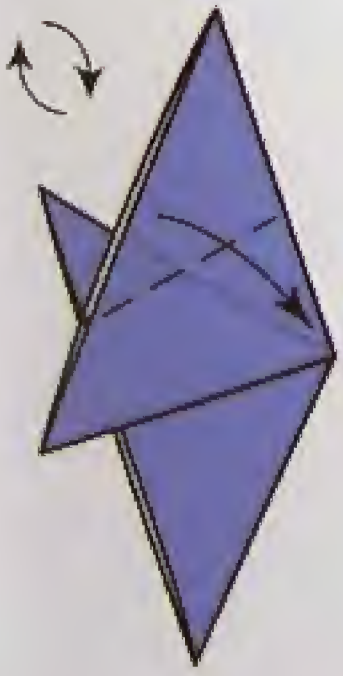


3 Re-form the waterbomb base.

4 Swivel the upper triangle to the right and upwards, while keeping the lower triangle still. You're aiming to fold on the crease you made in Step 1.



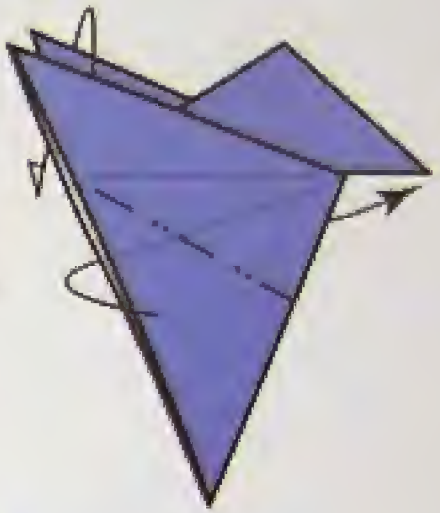


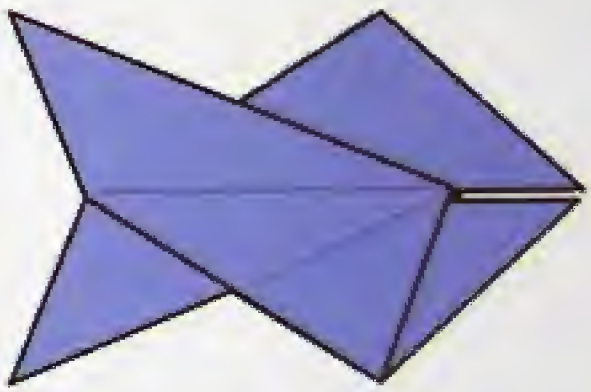


5 Here's the result, a simple, elegant angelfish

6 To continue, fold the large, upper flap to the right, so that the raw edges lie horizontally and goes over the nose of the fish.

7 Then fold the tail fin up over the same flap. Repeat the last two steps on the side underneath.





8 The completed waterbomb fish.

FOLDER'S TIP

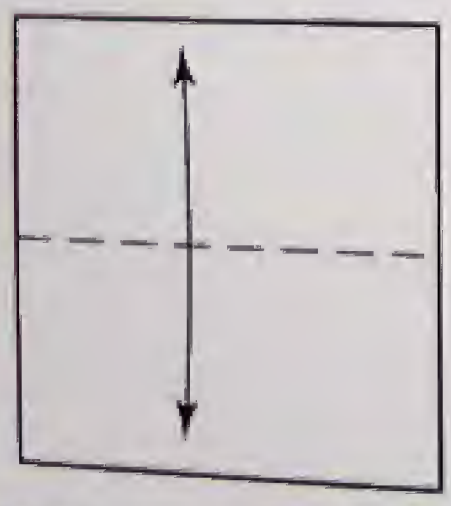
Form interesting patterns by arranging several fish together on a larger sheet. Shown here are a collection of angelfish and a collage of waterbomb fish stored together.

TARUMPTY TUM TUM

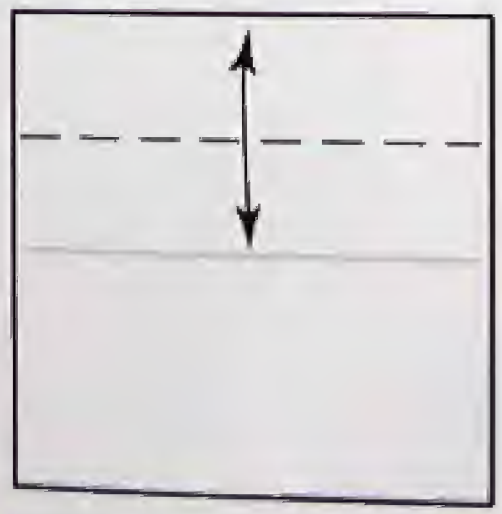
Design by Siero Takekawa

9 STEPS

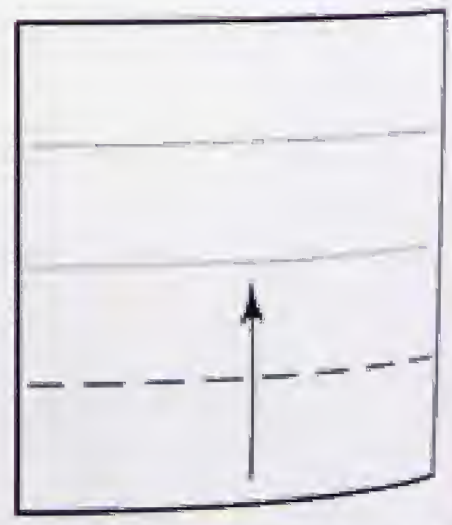
This model is by the Japanese master of simple origami designs, Takekawa. If balanced on one end, with the heavier side upwards, it will turn a full somersault when tipped over. You can play an origami game by showing friends how the model tips, then asking them to try for themselves. The trick is to place the model with its lighter end upwards; it won't somersault from that position and only the most observant people will guess why.



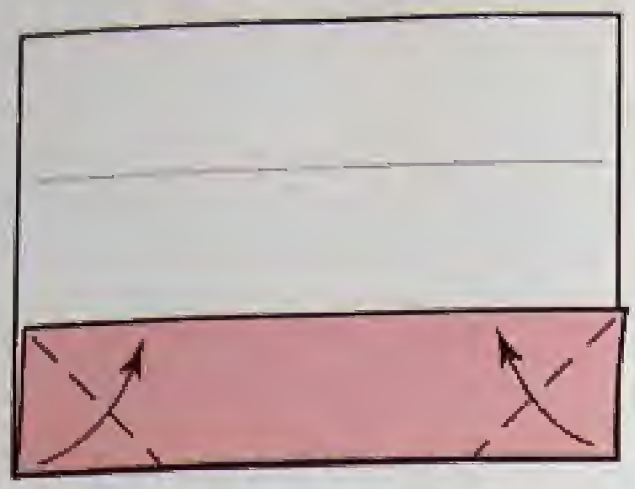
1 Start with a square of paper. Fold it in half from top to bottom, then unfold.



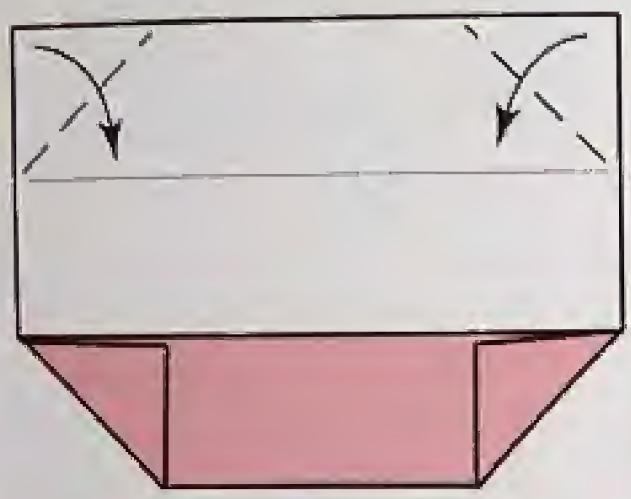
2 Fold the upper side to the centre, crease and unfold.



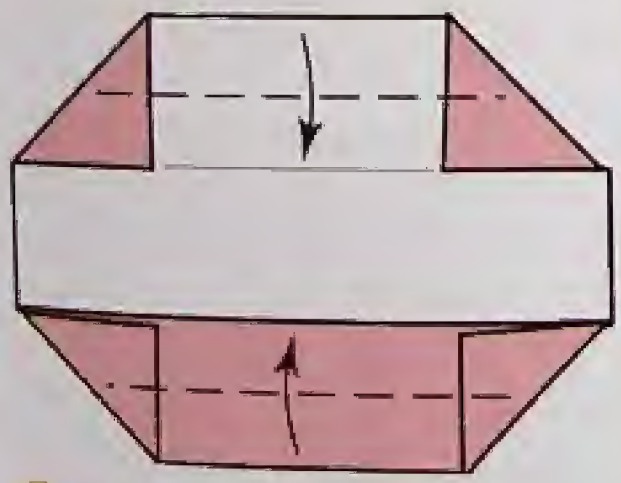
3 Fold the lower side to the centre, and tuck it in place.



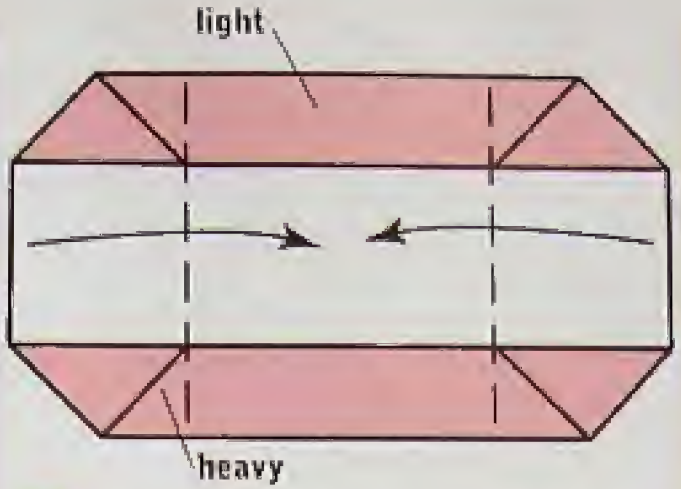
4 Fold in two corners to line up along the coloured raw edge.



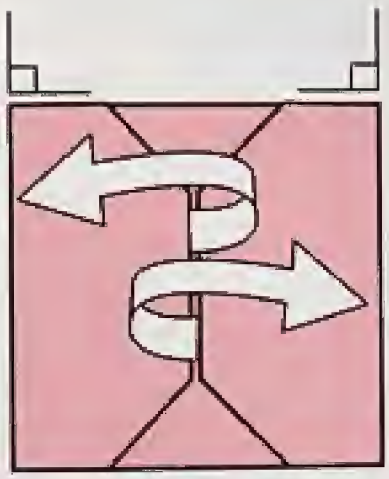
5 Repeat with the two original corners, folding to the crease.



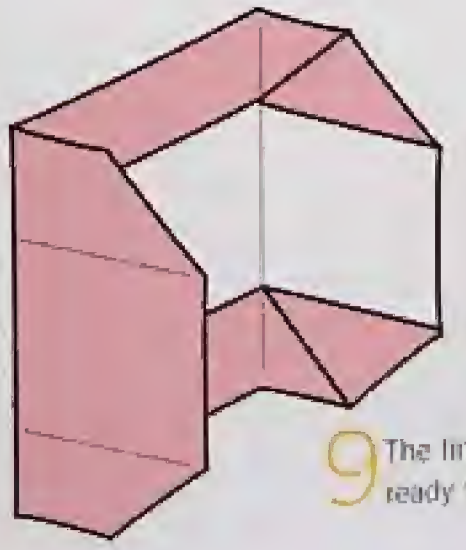
6 Fold the top and bottom sections in half. Hold the corners in place so they don't pop out as you fold.



7 The heavier side, with extra layers of paper, is marked here. Fold the side ends to meet in the centre. You're folding on hidden layers and will be able to feel where the paper naturally folds.



8 Open out these two flaps so they are at right angles to the central section.

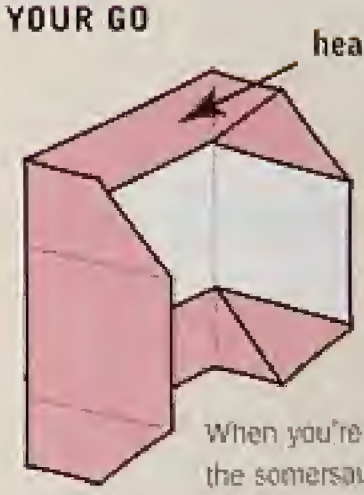


9 The finished model, ready to somersault!

CHALLENGE

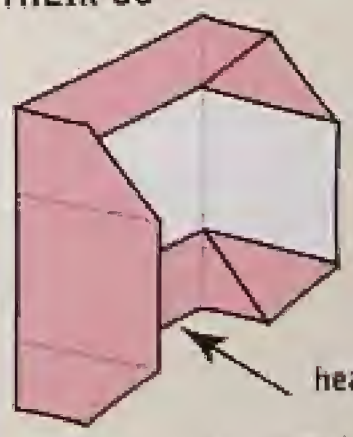
There's an ongoing Tumpey Tum Tum challenge to see how Models are lined up so that one knocks over another. The aim is to topple the greatest number with a single push. The current world record is 123. Can you beat it? Remember that one topple could be used to start the next two topples.

YOUR GO



When you're demonstrating the somersault, make sure the heavy edge is on top.

THEIR GO

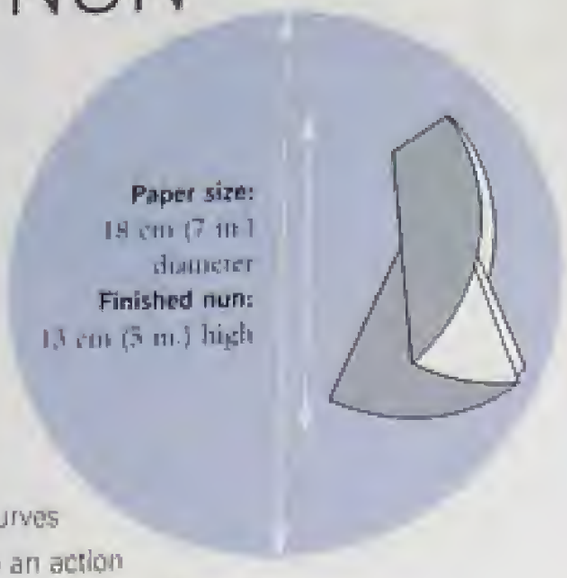


Then casually set up the model with the light edge on top, so that it won't flip over.

ROCKING NUN

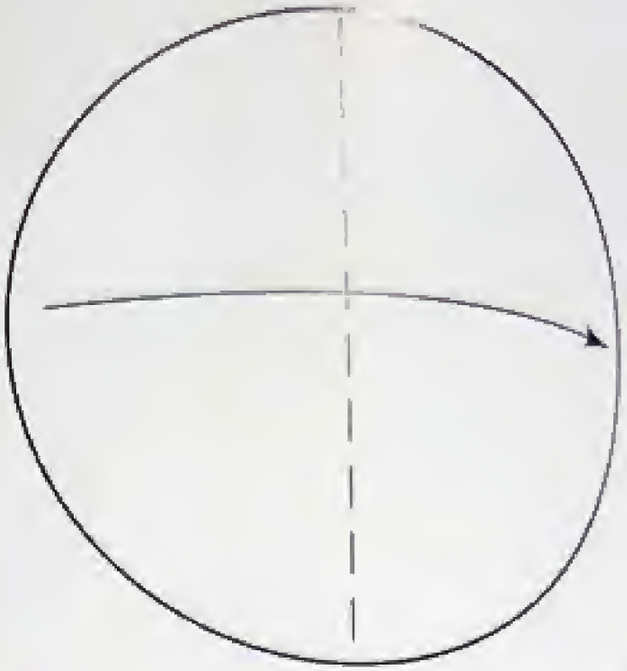
Traditional design

7 STEPS

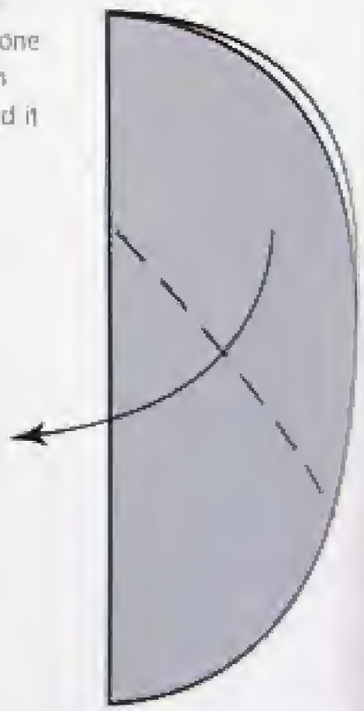


Paper size:
18 cm (7 in.) diameter
Finished nun:
13 cm (5 in.) high

A few folders prefer to work with circular paper. This may seem a little pointless, because as soon as you fold in four opposite sides of a circle, you have a square. The idea, however, is to fold simple designs that utilize the circle's curves in some way. This design is also an action model (in other words, it isn't just a static model, but does something).



1 Start with a circle (ideally black on one side and white on the other) and fold it in half.



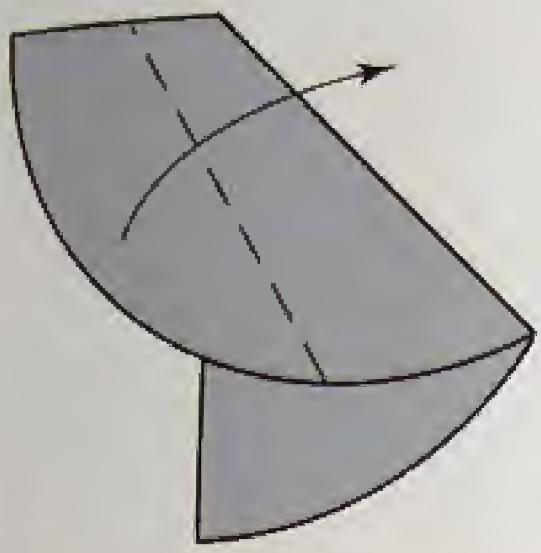
2 Fold over both sides as shown.

OUTSIDE REVERSE
REMINDER

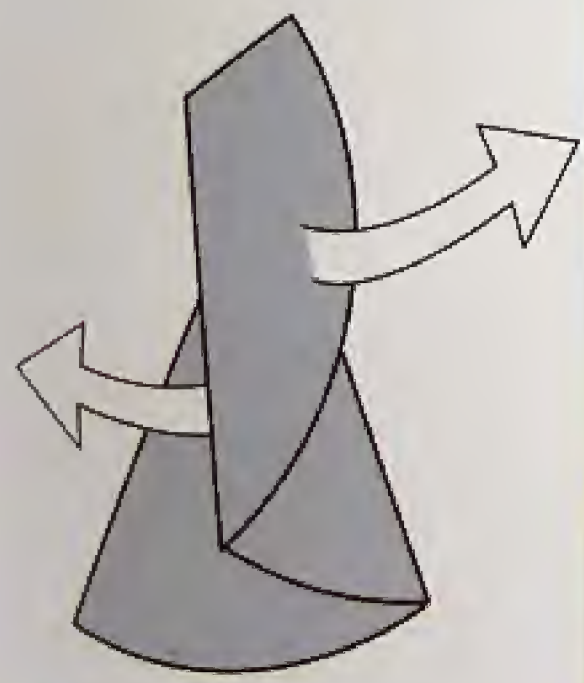
1. Pre-crease the paper.

2. Open both sides, flipping the point inside out.

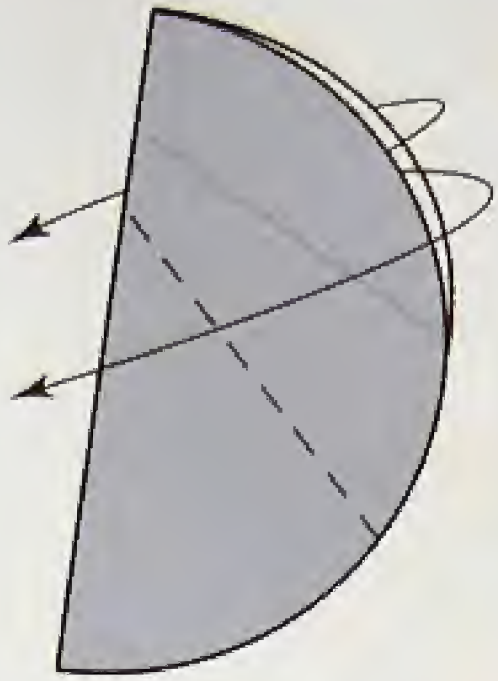
3. Complete.



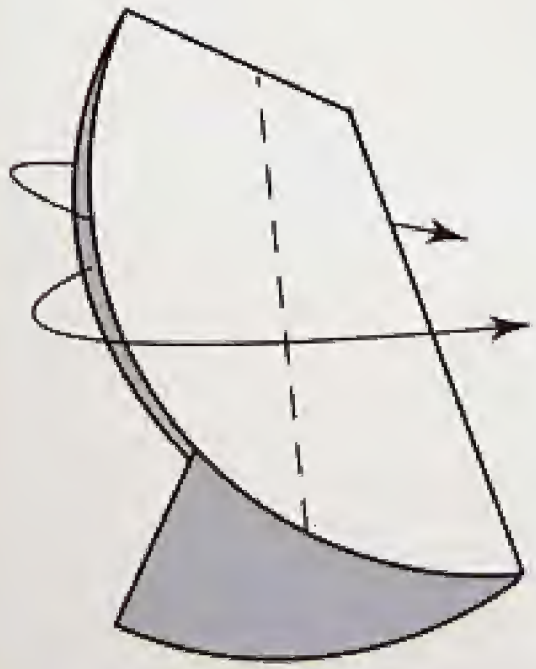
3 Fold back a section, to match the next diagram.



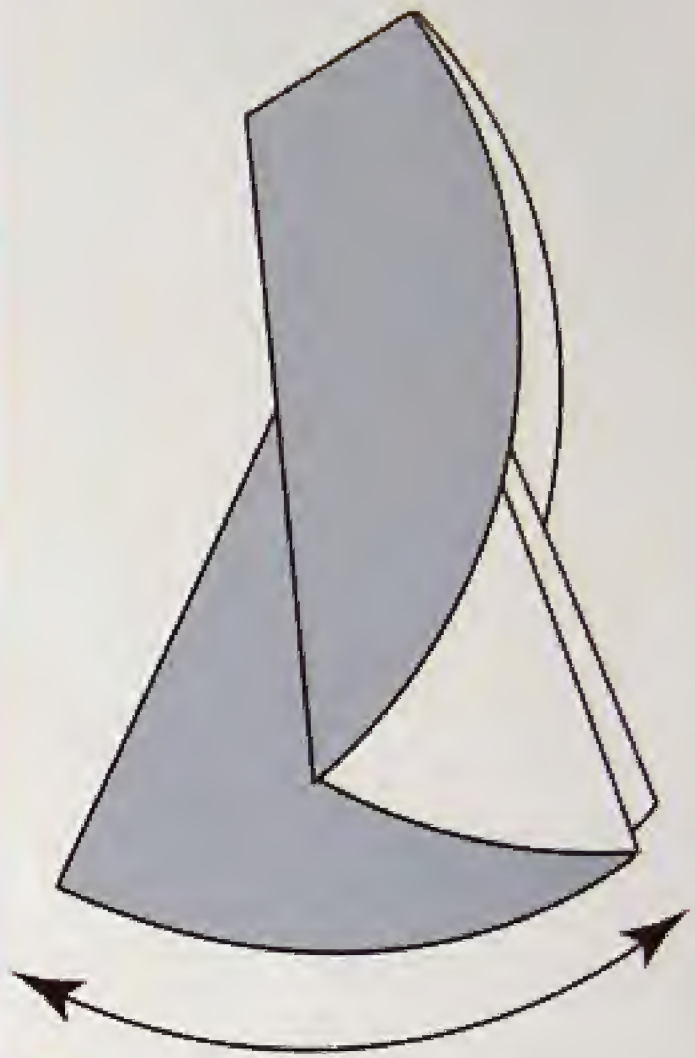
4 Unfold the last two moves.



5 Make an outside-reverse fold (see reminder panel, left), using the lower of the two creases you've made.



6 Make a second reverse fold using the other crease.



7 The completed nun, ready to rock!

CHALLENGE

Can you design a simple model from circular paper? Remember, if you make too many creases the paper becomes just another square. Your design needs to use the curved edge of your paper.

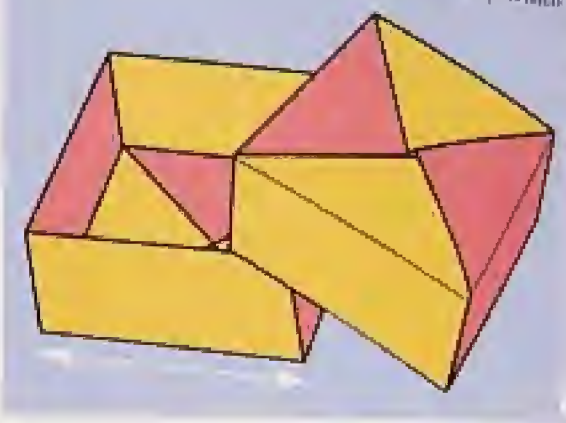
FUSE BOX

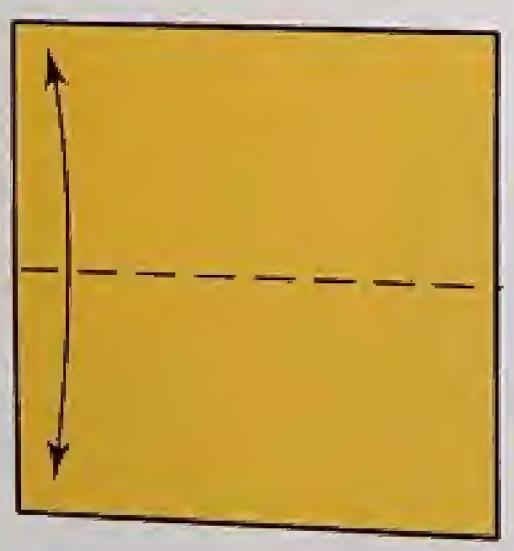
Design by Tomoko Fuse

10 STEPS

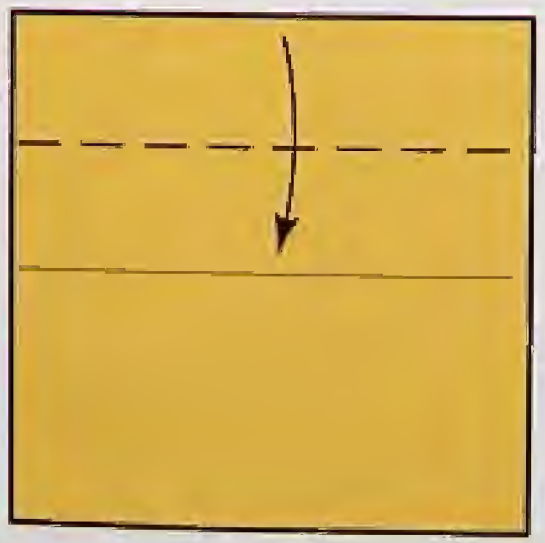
Tomoko Fuse caused a minor revolution in origami when she unveiled her system for making boxes from several sheets of paper. The seemingly endless series of fascinating containers (often with perfectly fitting lids), made with three, four, five, six, eight or twelve sides, proved her to be a major creative talent. This box is one of the simplest of her repertoire, and a classic of economy and efficiency. You may feel that you need an extra pair of hands towards the end, but the model is perfectly achievable. You'll need four squares, two each of two colours (or four of different colours).

Paper size:
18 cm (7 in.) square
Finished box:
9 cm (3½ in.) width

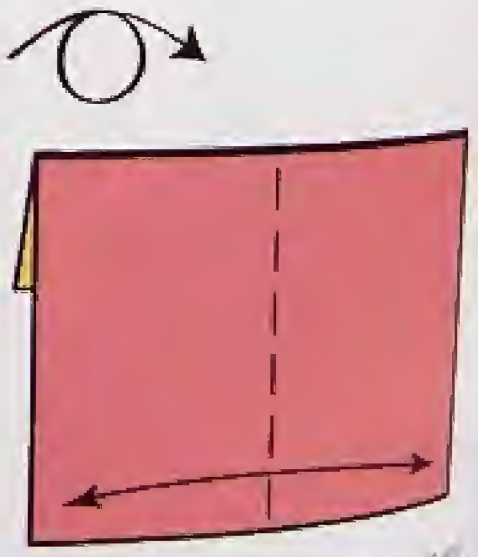




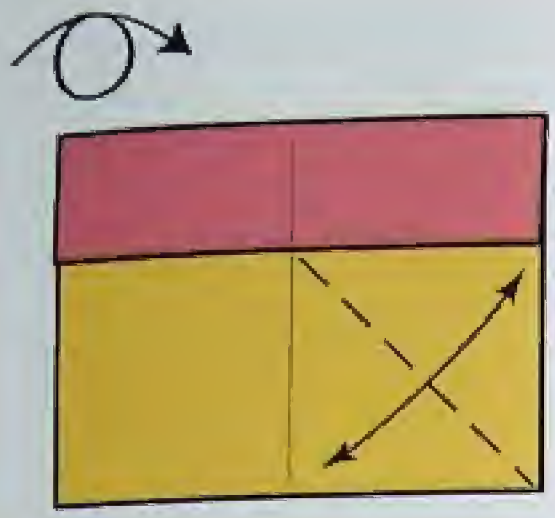
1 Start with a square, lighter side upwards, and crease in half.



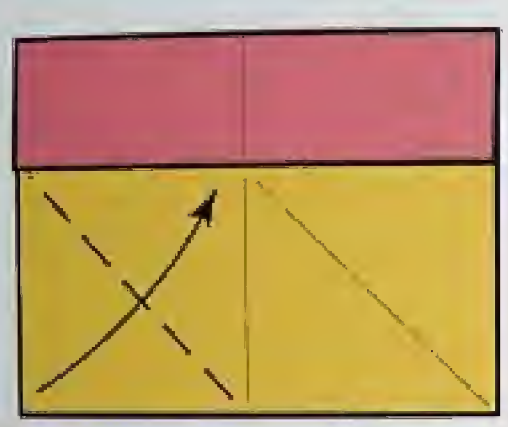
2 Fold the top edge to the centre crease. Turn the paper over.



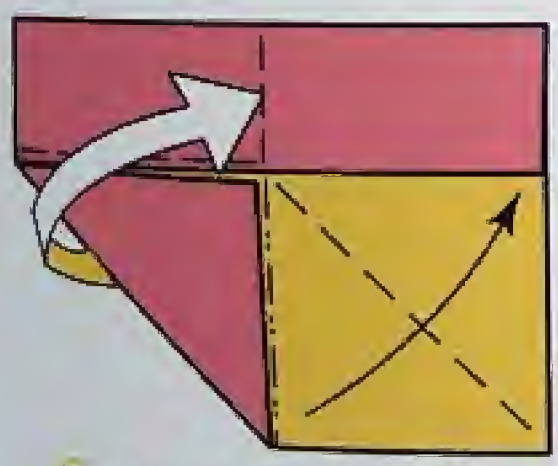
3 Fold in half from side to side, crease and unfold. Turn the paper over again.



4 Crease the lower right diagonal and unfold.



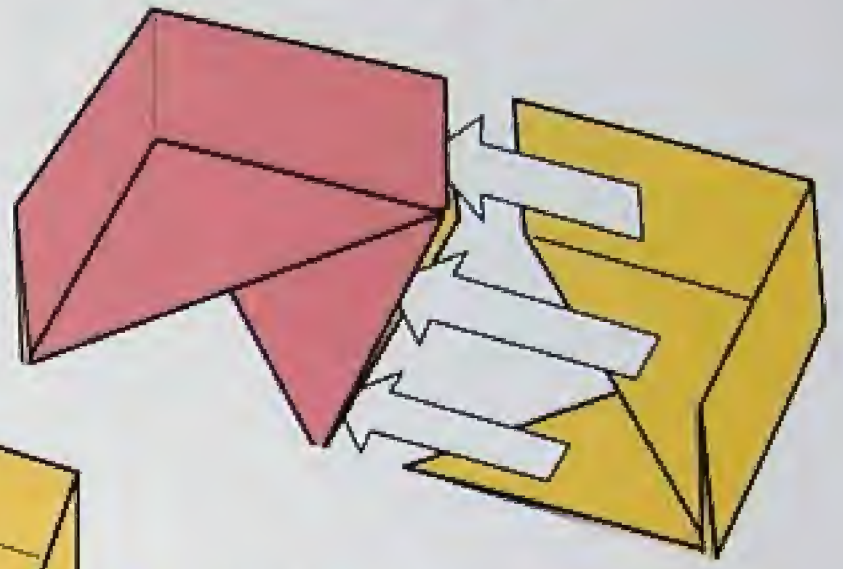
5 Fold the lower left corner to the centre.

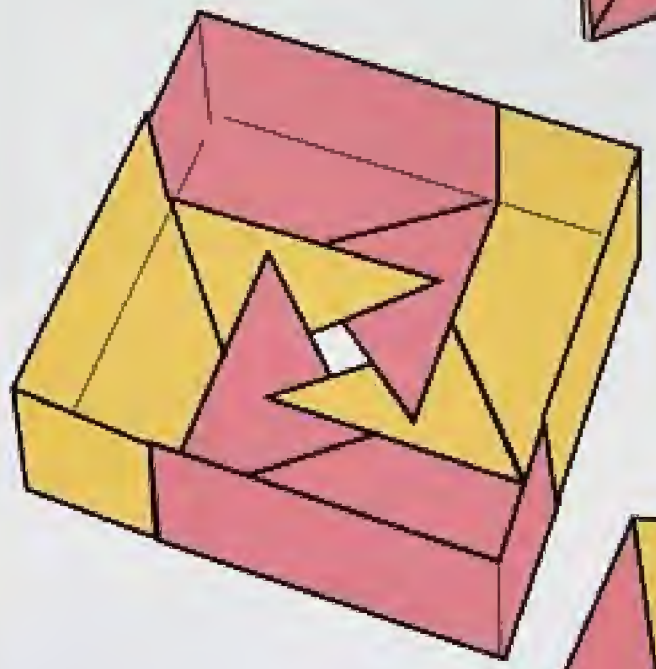


6 Use the creases shown to form the paper into three dimensions. You'll need to pinch the upper third of the centre crease into a valley.

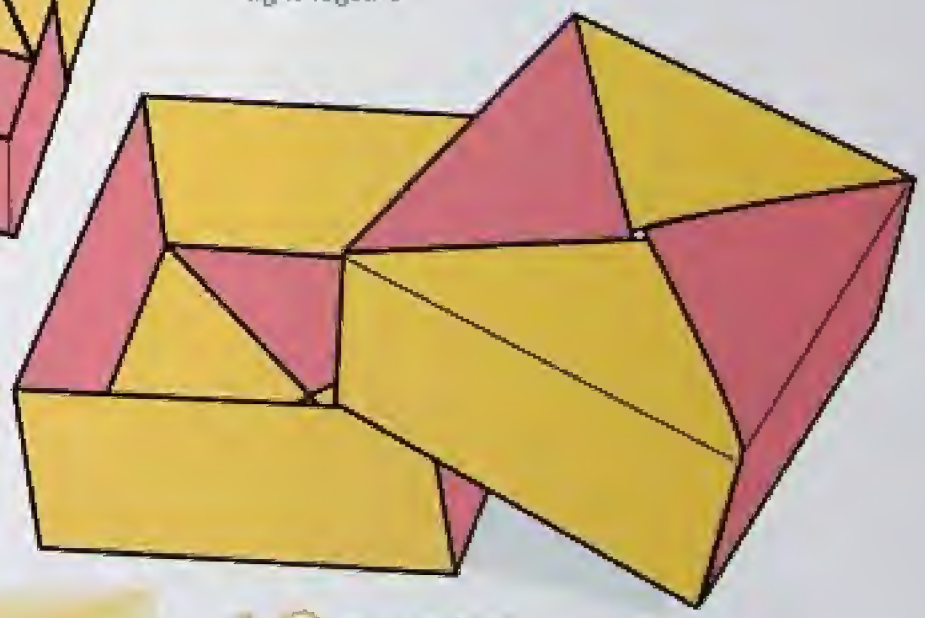
7 Swing the triangular flap downwards to finish the unit. Then make three more

8 Arrange two units as shown and slide them partially into each other. Follow the white arrows carefully to see which flap slides where.





9 Position all four units loosely. When they are in place, slide in each pair, little by little, until they are tight together.



10 The completed box and lid.

CHALLENGE

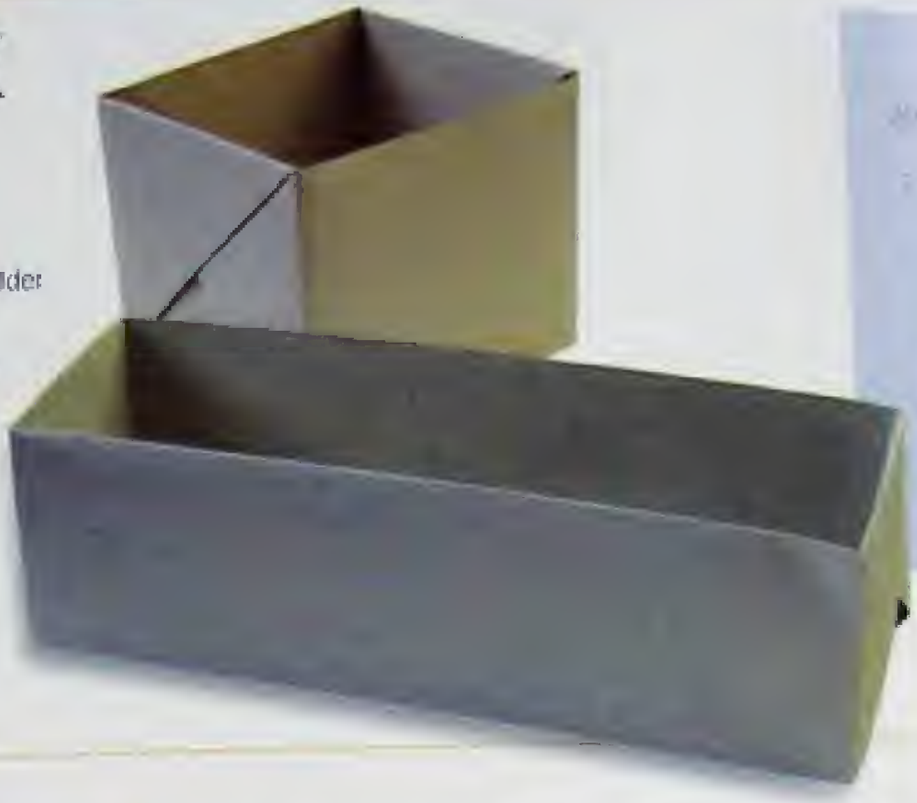
Can you work out which creases to alter to form a slightly larger lid?

BAGGI'S BOX

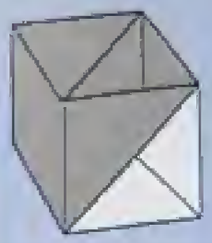
Design by Giuseppi Baggi

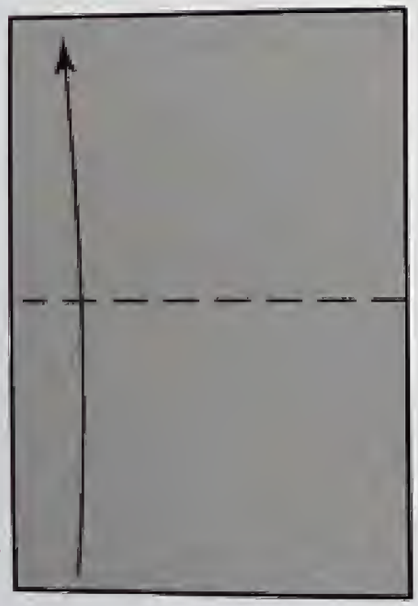
11 STEPS

Baggi was a highly creative American folder of the early 1960s. This is one of his classic designs, a delightfully simple yet very practical box. You can make it from a rectangle of almost any proportions and can start with the paper laid either lengthways or sideways.



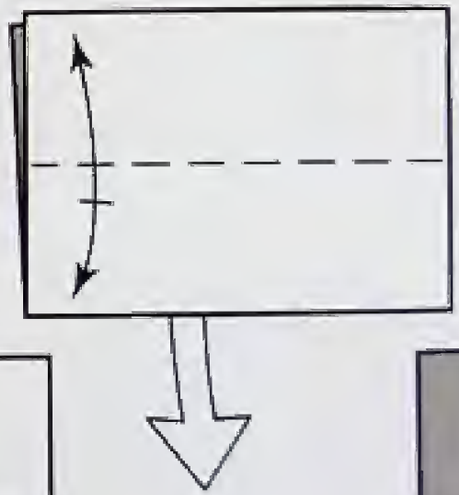
Paper size:
[illegible] (12 in.) long
Finished box:
[illegible] (3 in.) high

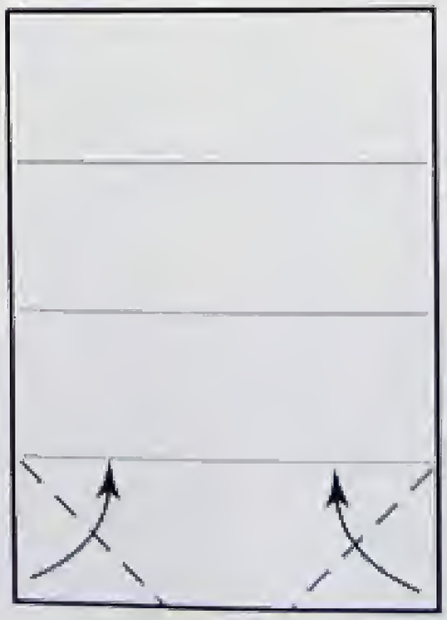




1 Starting with a rectangle, fold the lower short edge to the upper edge.

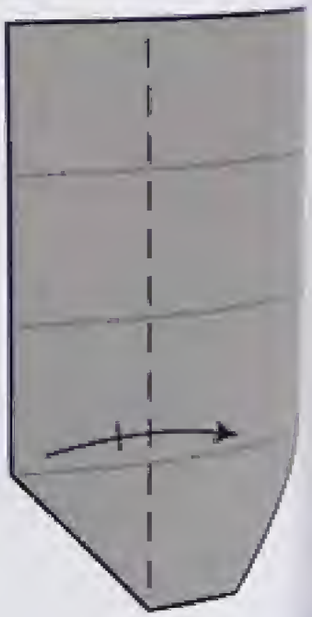
2 Fold the upper raw edge to the lower edge, crease and unfold. Repeat the move behind, then unfold from underneath, back to the rectangle.

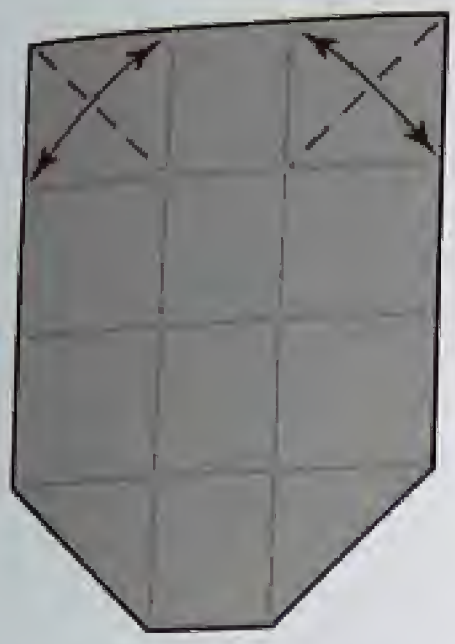




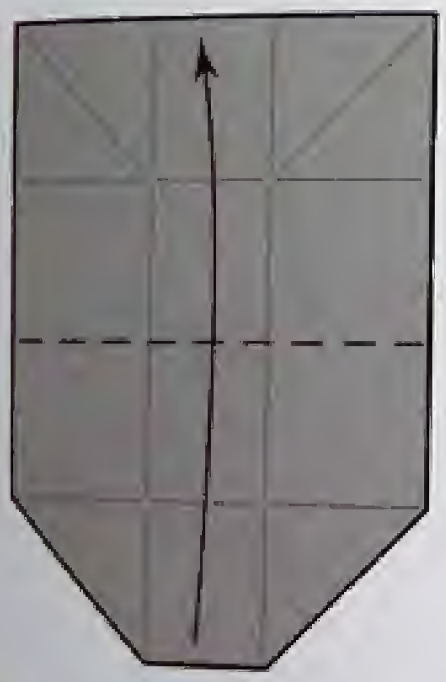
3 Fold in the lower corners to meet the first horizontal crease. Turn over the paper.

4 Form a vertical crease that ran at the lower left corner. Repeat on the right-hand side.

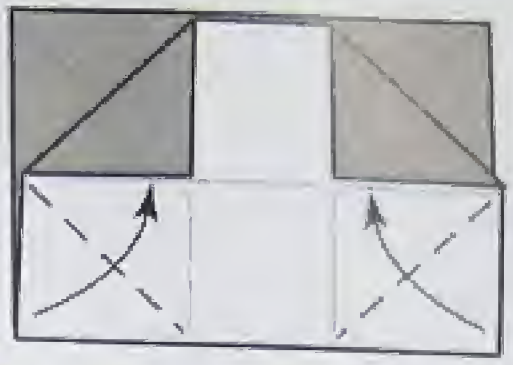




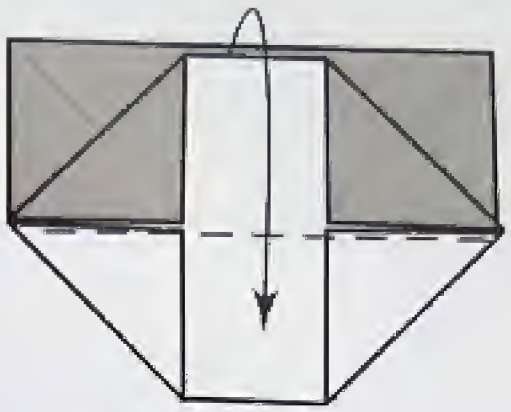
5 Crease two diagonals on the upper corners.



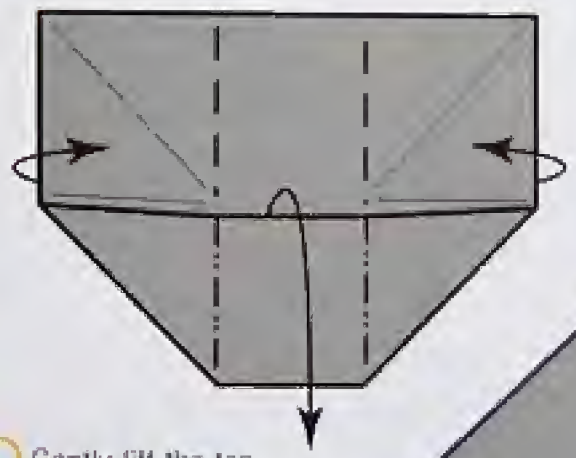
6 Fold in half upwards, using an existing crease.



7 Fold over the two lower (double-thickness) corners.



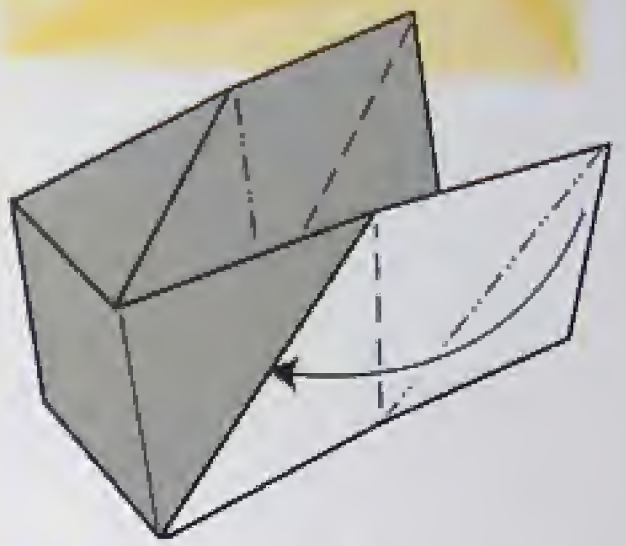
8 Fold the upper flap down over the two corners.



9 Gently lift the top edge and open the model into three dimensions.

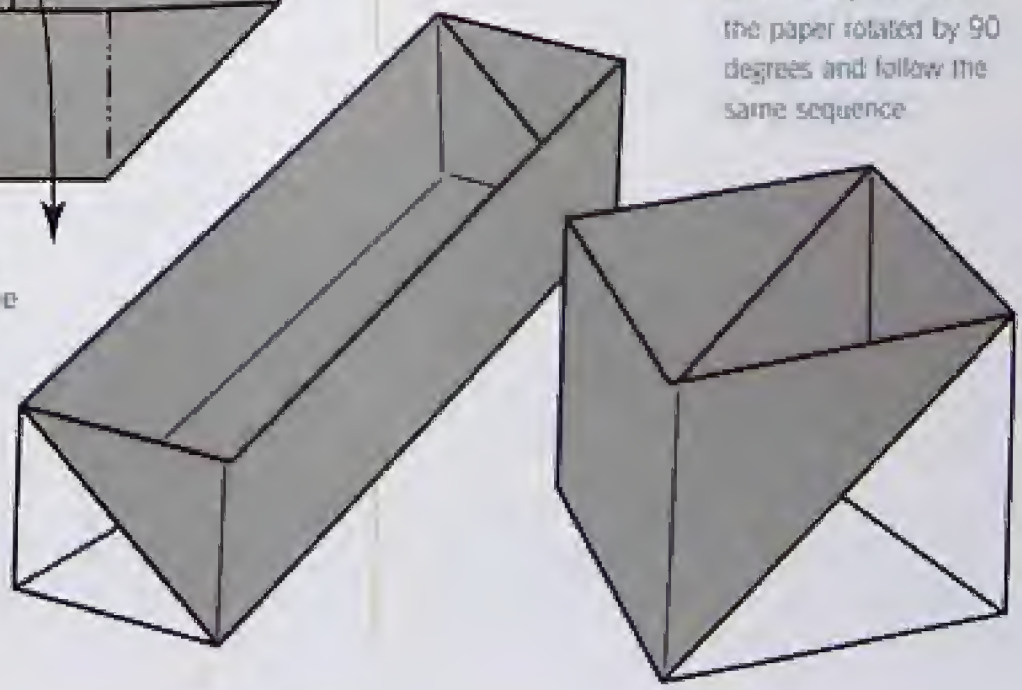
CHALLENGE

What do you get if you follow this sequence with a square for a starting format? If it works, which preparations have altered, and can you see why?



10 Use existing creases to carefully tuck the corners into the pockets.

11 The completed box. To make the longer format box, start with the paper rotated by 90 degrees and follow the same sequence



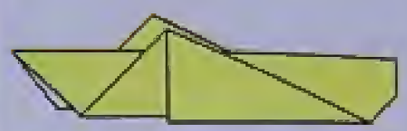
GRASSHOPPER

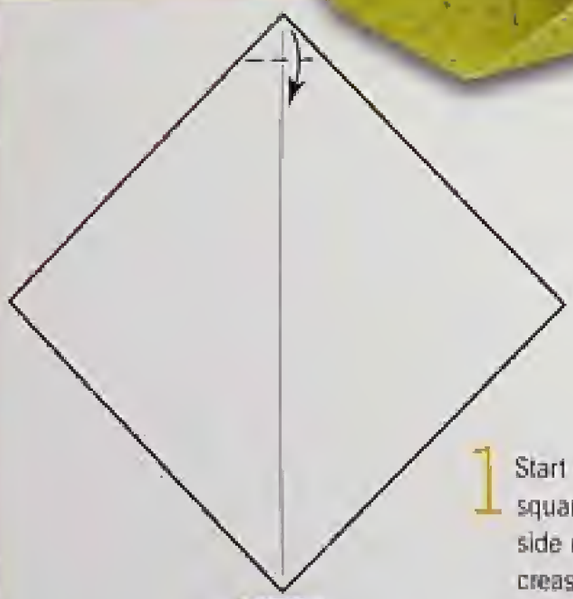
Design by Gay Gross

5 STEPS

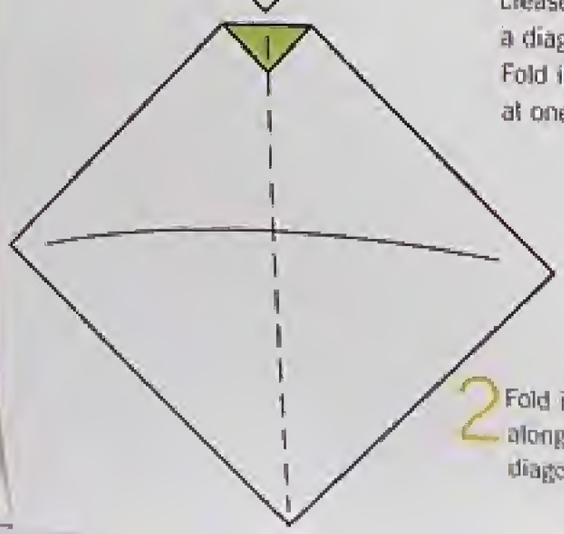
Simple action models can be much harder to create than complicated ones. Capturing the form of a living subject as well as its movement requires true empathy with both nature and origami. This design is best made from crisp paper, so you can give it a good tap to start the movement without damaging it.

Paper size:
18 cm (7 in.) square
Finished grasshopper:
16.5 cm (6½ in.) long



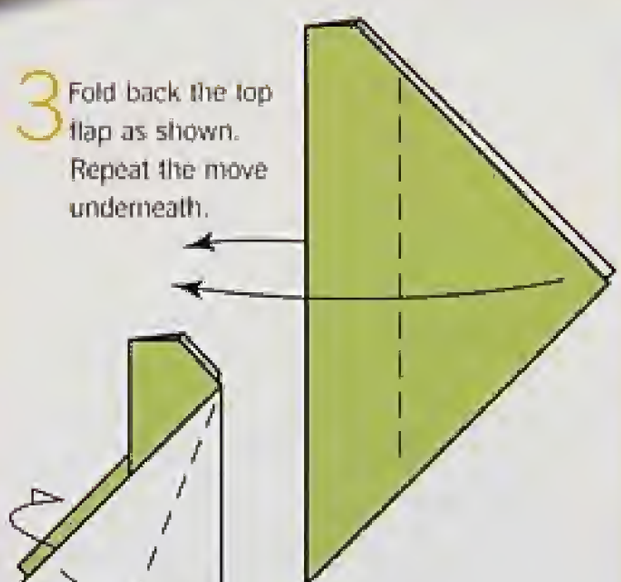


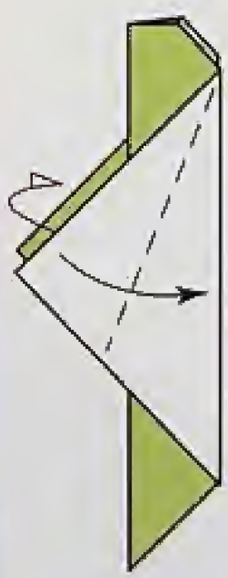
1 Start with a square, white side up, creased along a diagonal. Fold in the tip at one end.



2 Fold in half along the diagonal.

3 Fold back the top flap as shown. Repeat the move underneath.





4 Fold the (raw) upper edges of the triangular flaps to meet the vertical folded edge on both sides.

5 The grasshopper is ready for action. Make it jump with a small tap on the tail end. You will need to practise to perfect the action.

CHALLENGE

How high can your grasshopper jump?

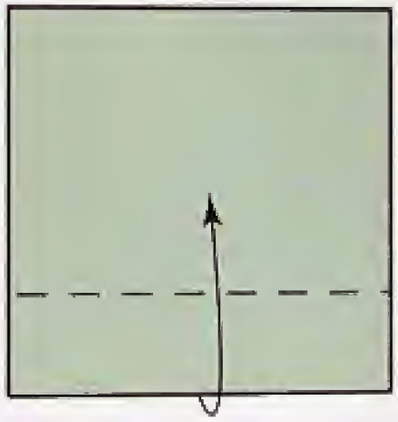
SAIL ON THE HORIZON

Design by Nick Robinson

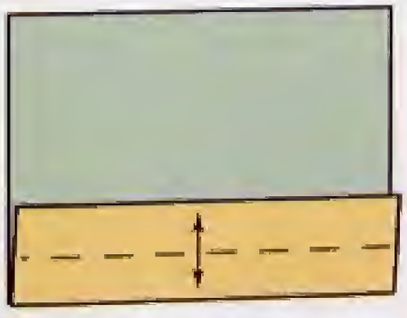
6 STEPS

A relatively unexplored area of origami uses the two colours of origami paper to depict a scene. Here the silhouette of a sailing-boat on the horizon at dusk is evoked.

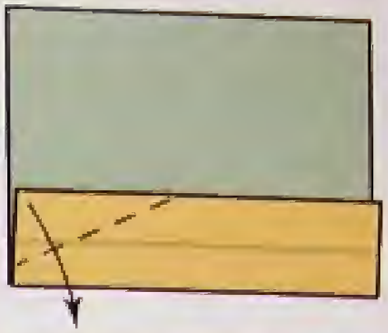
Paper size:
18 cm (7 in.) square
Finished scene:
7.5 cm (3 in.) high



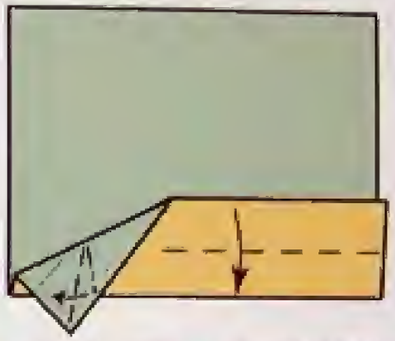
1 Fold over about one-quarter of the sheet.



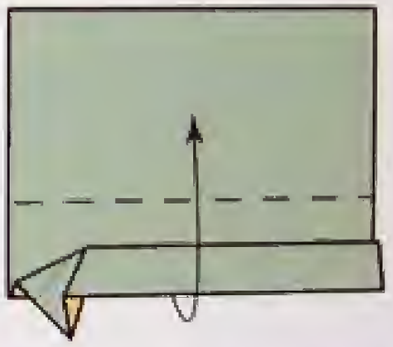
2 Crease this flap in half.



3 Fold over a corner (note the start and end points carefully).



4 At one end make a crimp (see reminder panel, left), as you fold the raw edge downwards.



5 Fold over about one-third of the paper.

6 The completed scene

CRIMP
REMINDER

1. Pre-crease both creases and fold the paper inside

2. Complete

CD COVER

Traditional design

10 STEPS

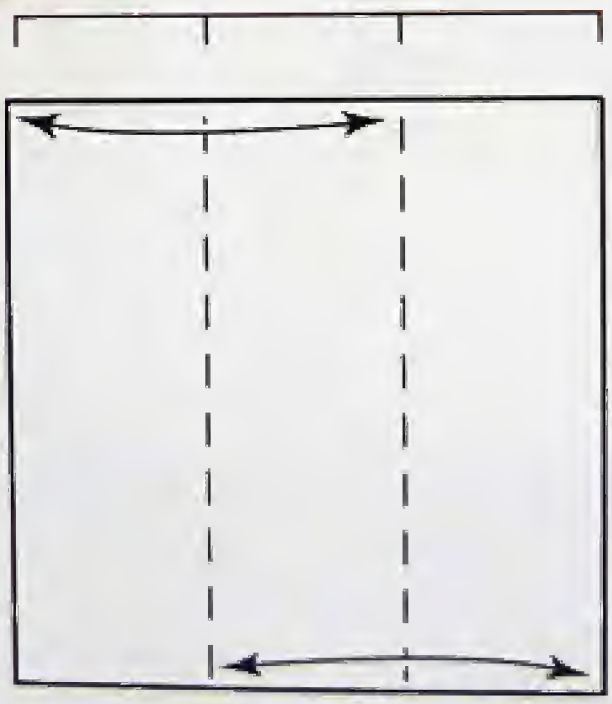
This is a modern-day use of a very old Japanese design, known as a tato, or purse. Traditionally used to hold money or small presents, this model makes a practical container for a CD or DVD, which is inserted before you fold Step 7.

Paper size:
38 cm (15 in.) square
Finished CD cover:
19 cm (7½ in.) square

DIVIDING A SQUARE INTO THIRDS
REMINDER

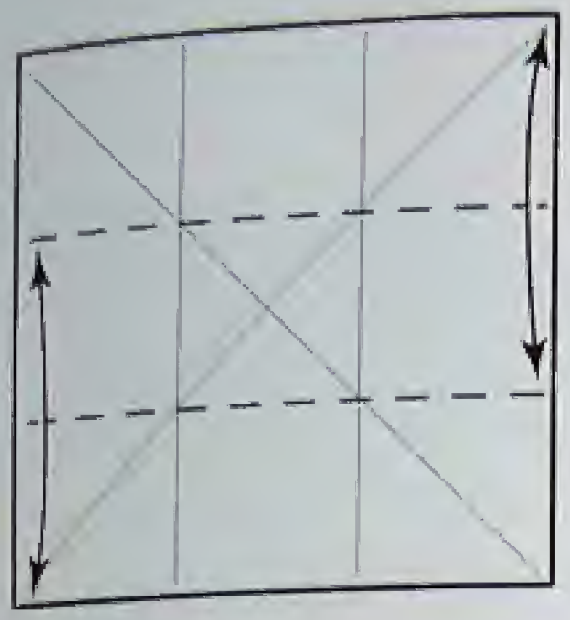
Here's a third method for finding thirds. Compare it with the two methods on page 35.

1. Where the two diagonal creases meet marks a third.
2. Starting at the lower right corner fold the lower left corner to touch the vertical halfway crease. Crease where shown and unfold.
3. Fold the lower right corner to touch the most recent crease. This is one third.

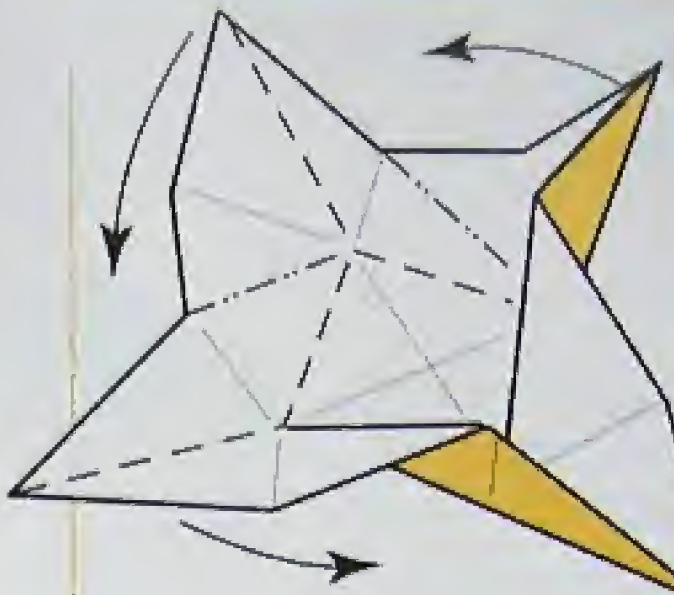


1 Start with a square, white side upwards. To hold a CD it should be 38 cm (15 in.) across. Divide one side into thirds (see reminder panel, above).

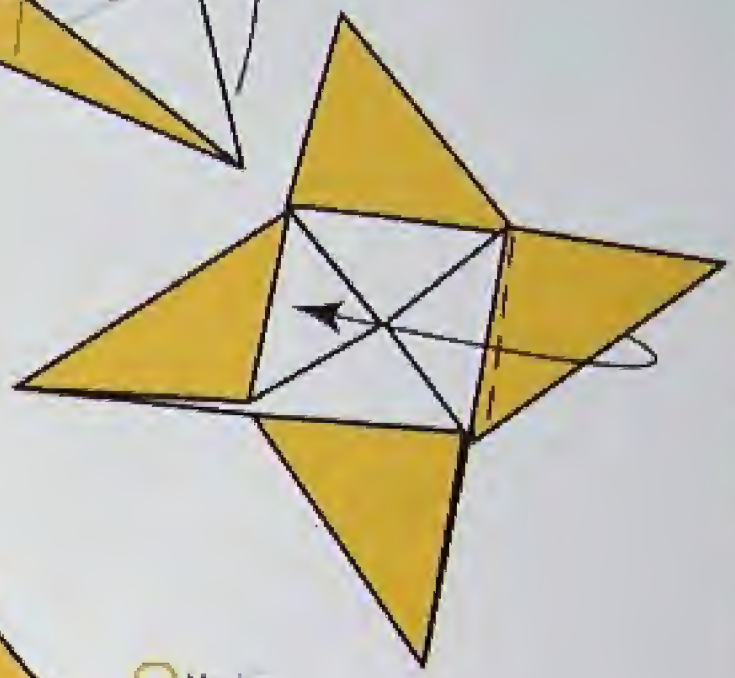
2 Add both diagonal creases.



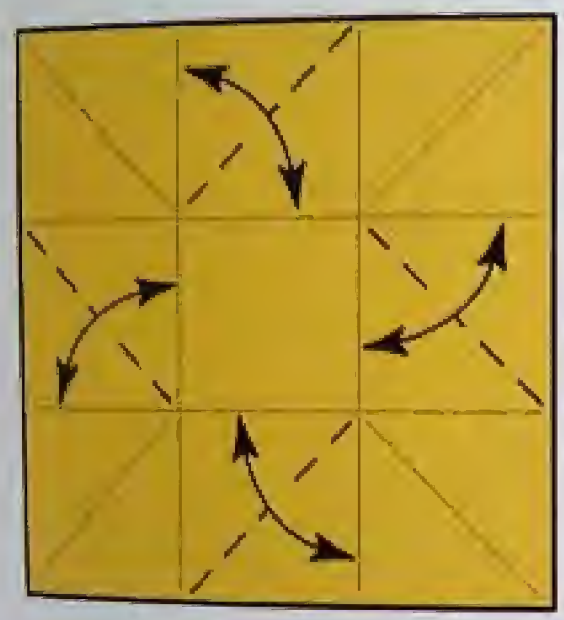
3 Now add the horizontal third creases.



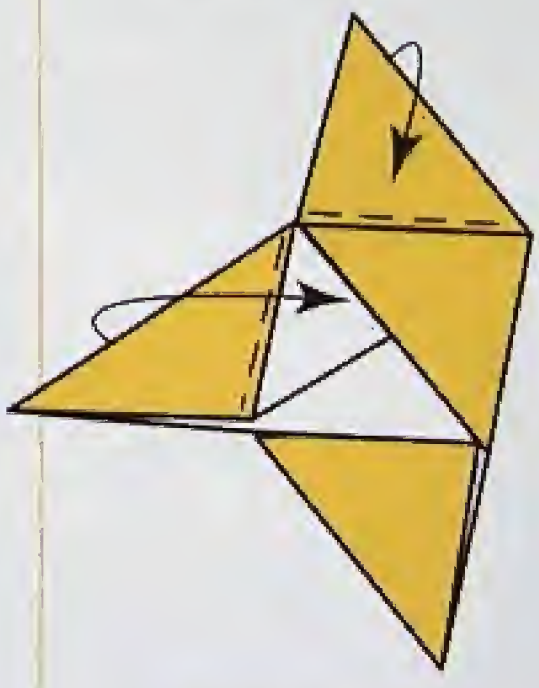
6 This is the move in progress.



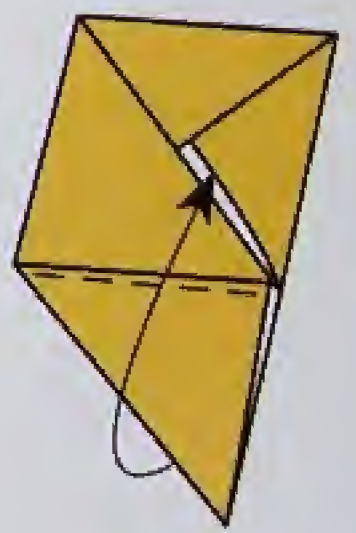
7 With luck, the model will collapse into this form. Insert the CD, then fold one corner inwards.



4 Turn the paper over and add small valley creases where shown.

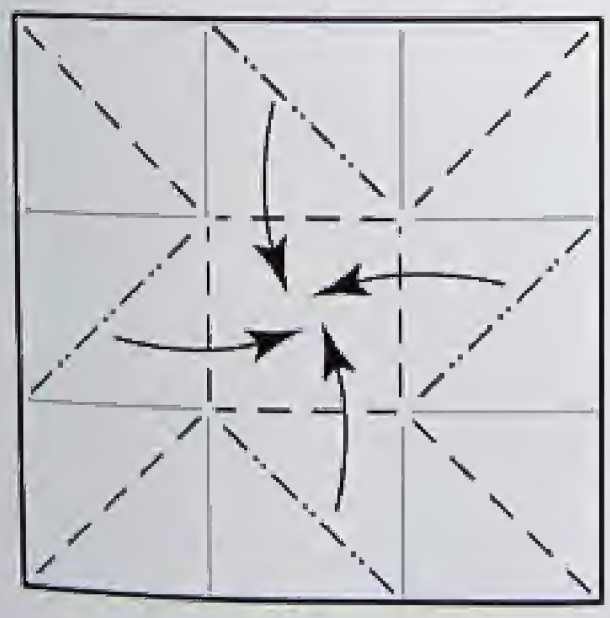


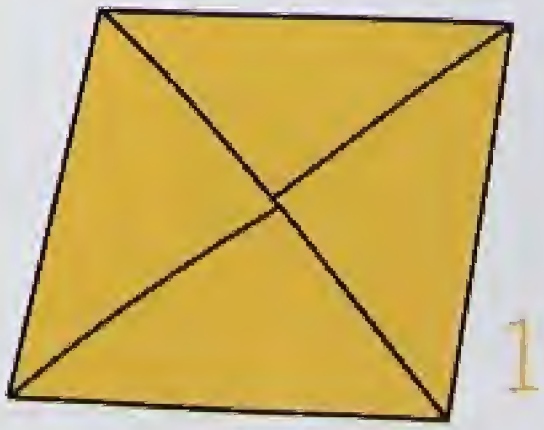
8 Moving anticlockwise, fold in the next two corners.



9 Finally, tuck the last corner under the first to lock the model together.

5 Turn back to the white side and start to fold on the creases shown, all of which have been pre-creased.





10 The completed CD cover.

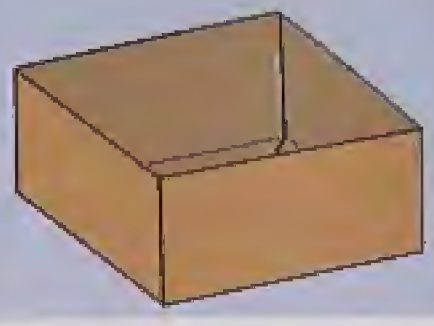
MASU BOX

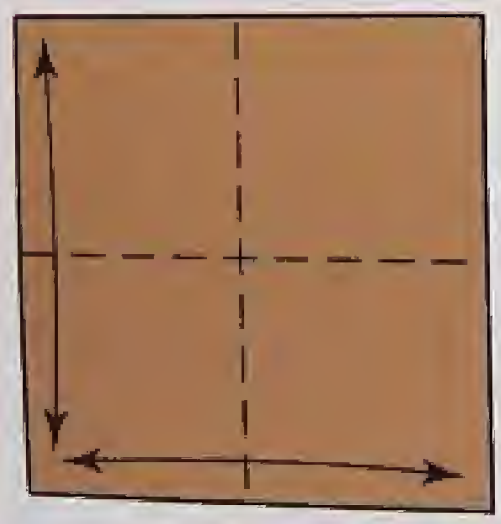
Traditional design

10 STEPS

A masu box is a traditional Japanese wooden box, used for measuring rice, beans or, sometimes, sake. Many elegant wooden varieties can be bought. The paper version is also elegant, using simple, logical creases in a delightful folding sequence. The result is a perfect container that locks itself together and in many ways typifies traditional Japanese folding.

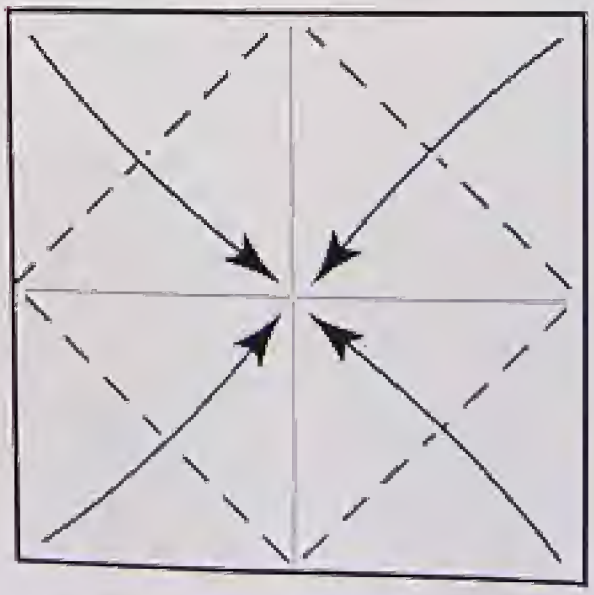
Paper size:
20 cm (8 in.) square
Finished box:
3.5 cm (1½ in.) high

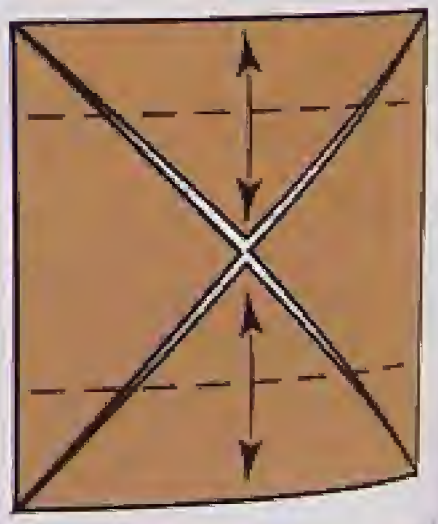




1 Start with a square, coloured side upwards. Fold in half both ways.

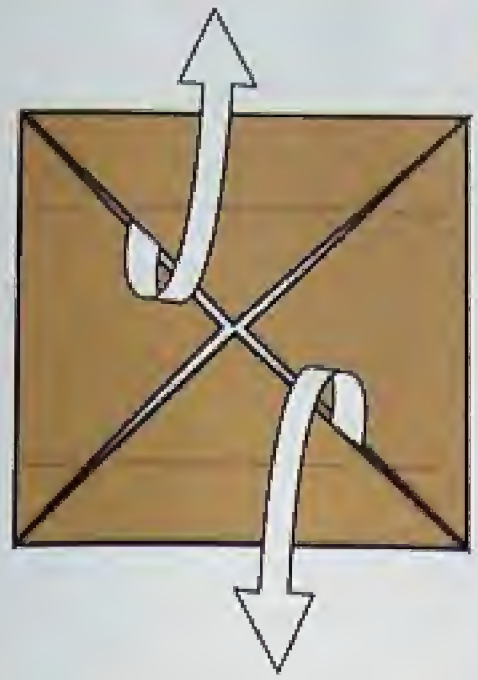
2 Turn over and fold the four corners to the centre (the technique of folding to the centre is known as a 'blintz').



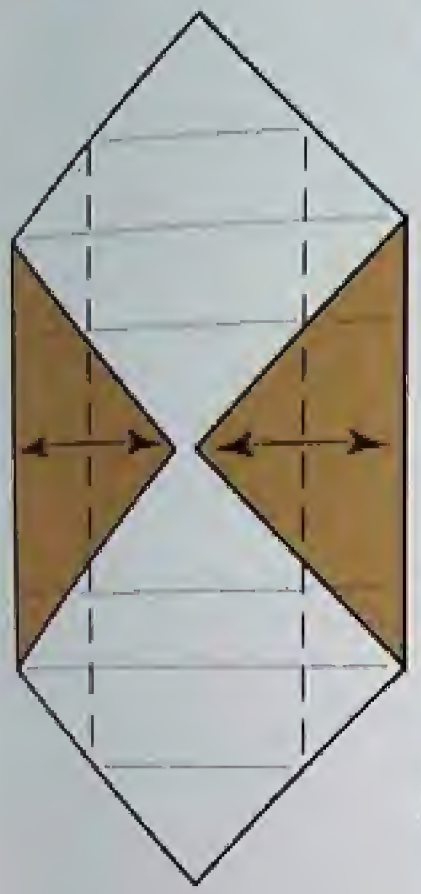


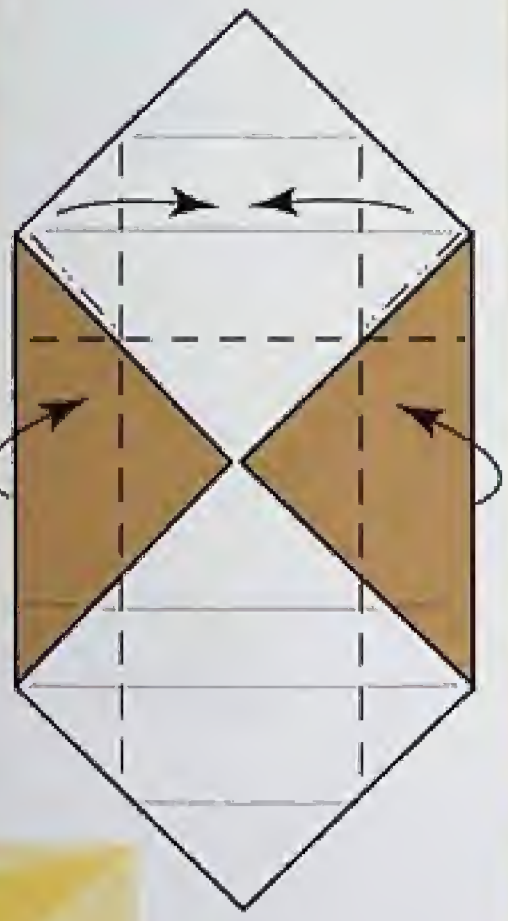
3 Fold two edges to the centre and unfold

4 Open out the upper and lower flaps.



5 Fold the sides to the centre, crease and unfold.



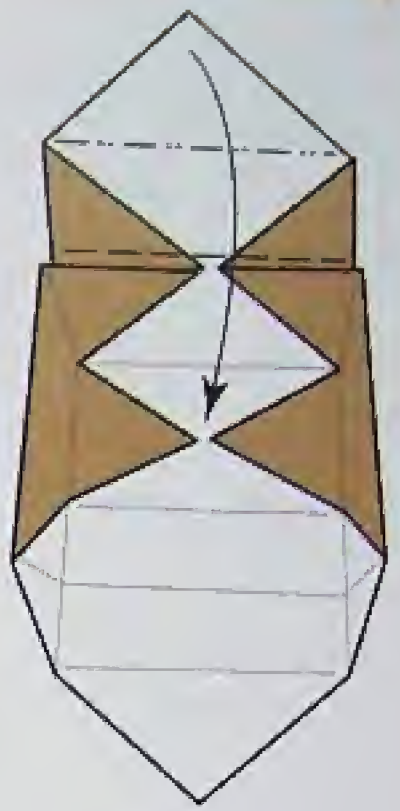


6 Following the creases carefully, refold the sides, raising the furthest corner towards you.

FOLDER'S TIP

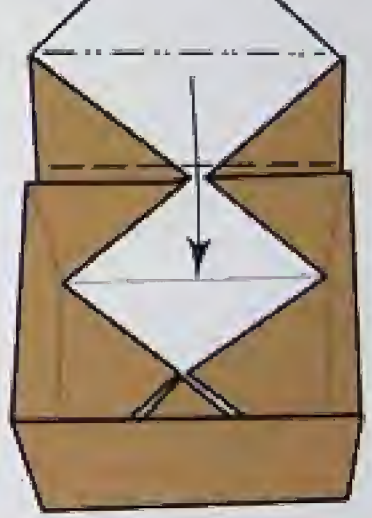
Adjust the creases in Steps 3 and 5 to make a lid that fits perfectly.

7 Like this. Fold the flap into the centre of the box.

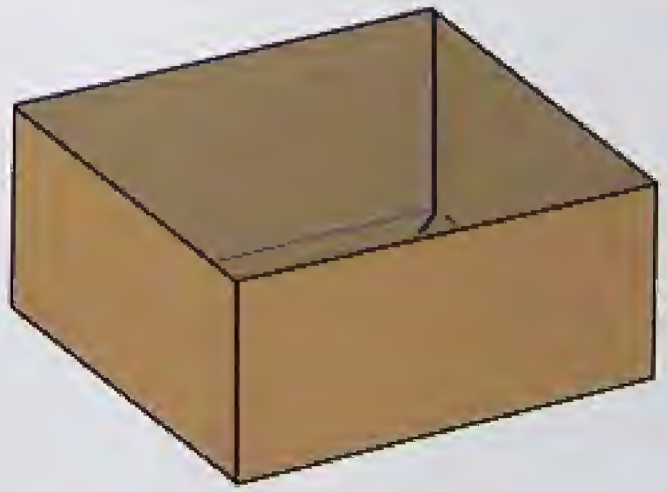


8 This should be the result. Rotate the paper.

9 Repeat the last two steps.



10 The completed masu box.



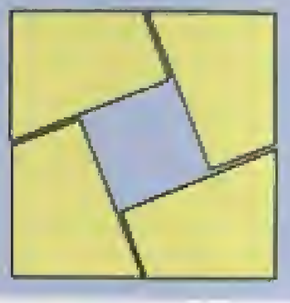
SQUARE DISSECTION PUZZLE

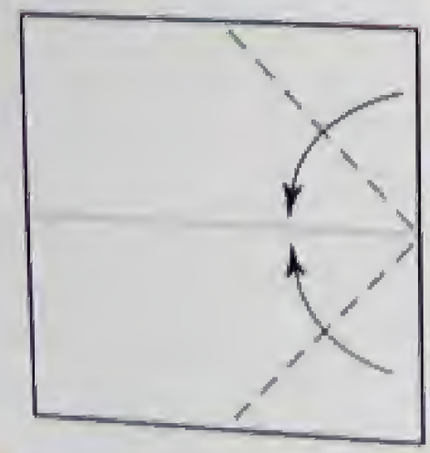
Design by Nick Robinson

10 STEPS

Many paper-folders are also interested in magic tricks, games and any kind of puzzle that requires a bit of thinking. One popular way of making a puzzle is to divide a shape into smaller identical sections and then challenge people to recreate it. These are known as dissection puzzles. Here is an origami version of a fairly well-known dissection. (Edwin Corie of France has produced alternative methods of folding this shape.)

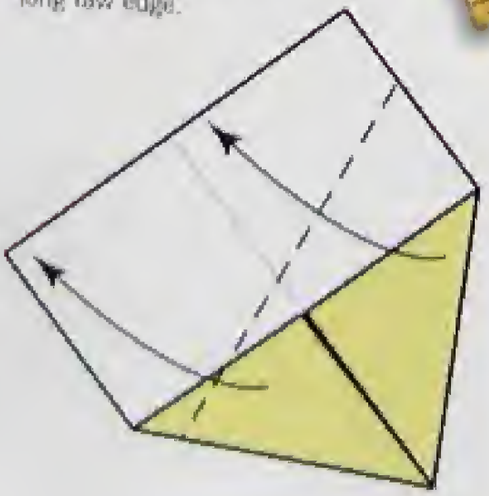
Paper size:
25 cm (10 in.) square
Finished puzzle:
Each unit is ¼ of original square





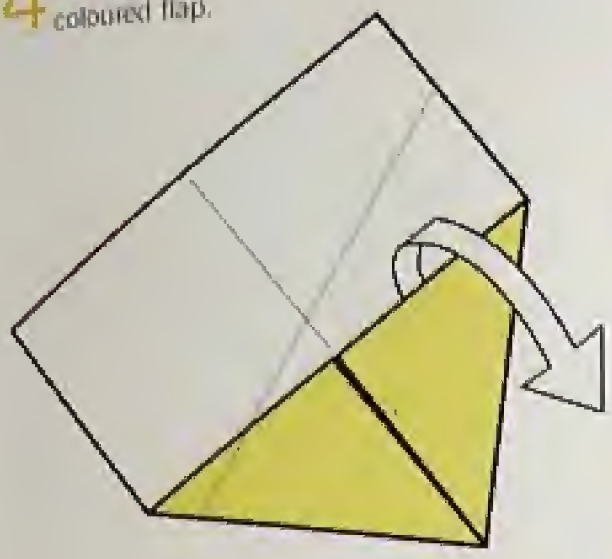
1 Start with a square, white side upwards, creased in half from top to bottom. Fold these two corners to meet the centre crease.

2 Take the lower right folded edge to meet the long raw edge.

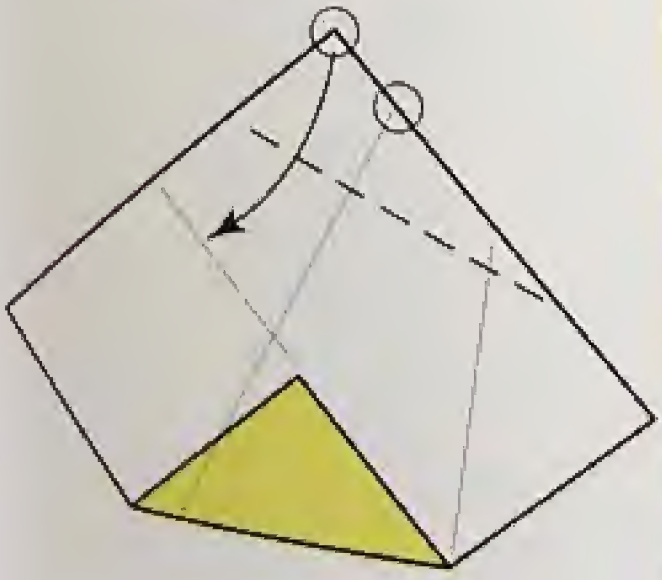


3 Like this. Unfold the last step.

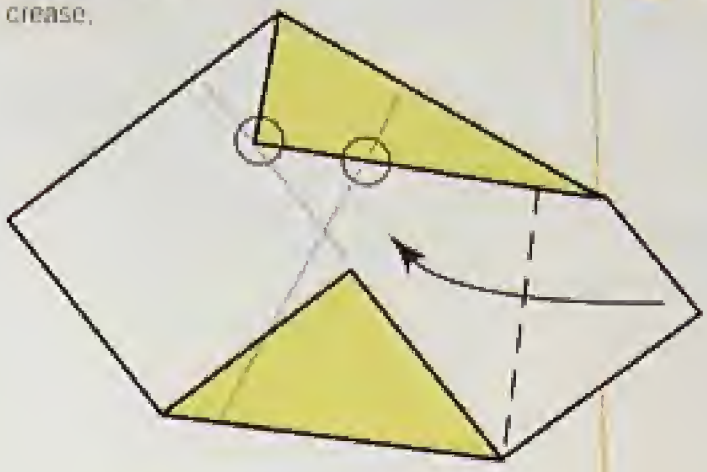
4 Unfold the right-hand coloured flap.



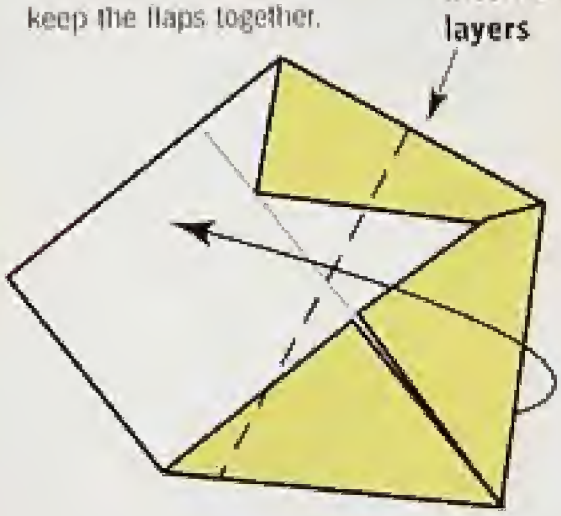
5 There are two locations to watch for here. Firstly, the corner will touch the halfway crease. Secondly, the long crease will lie upon itself. The circles show the reference points. Look at the next diagram carefully before making this fold.



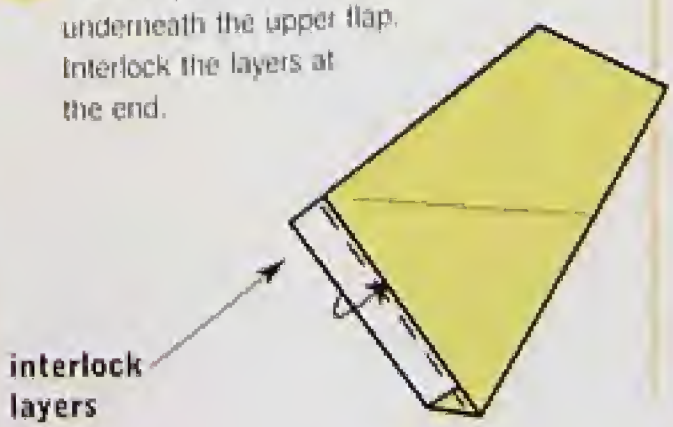
6 Refold the lower right corner on an existing crease.



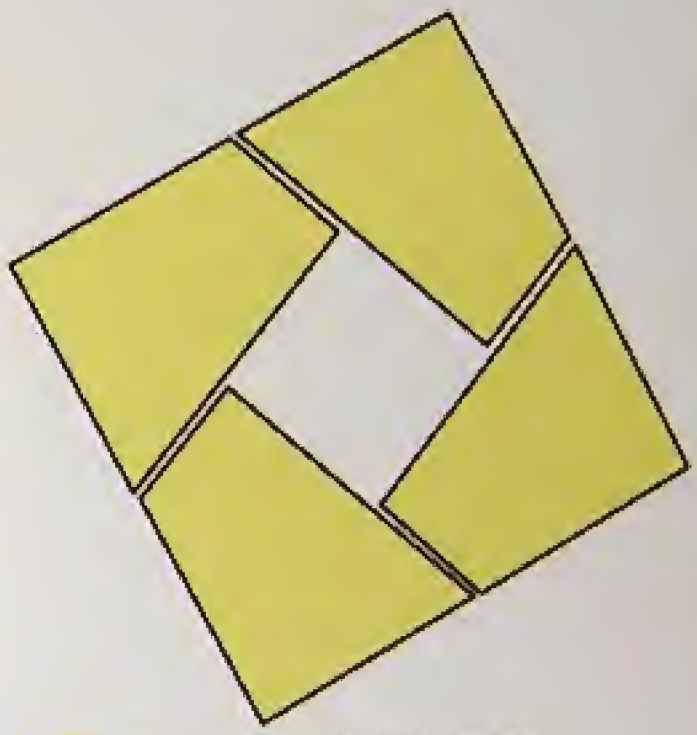
7 Again using an existing crease, fold over the lower section. Interlock the layers of paper to keep the flaps together.



8 Fold over the narrow strip of white paper, tucking it underneath the upper flap. Interlock the layers at the end.



9 The unit is complete. You will need four units in total.



10 Here is one way of forming a square with the units, but there is also another method. You could even count the square hole in the middle as a third solution!

CHALLENGE

Can you find a new folding sequence for this shape, but one that gives a bigger finished shape when folded from the same sized starting square?

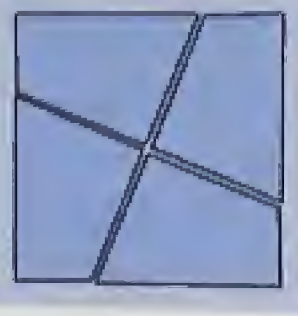
RECTANGULAR DISSECTION PUZZLE

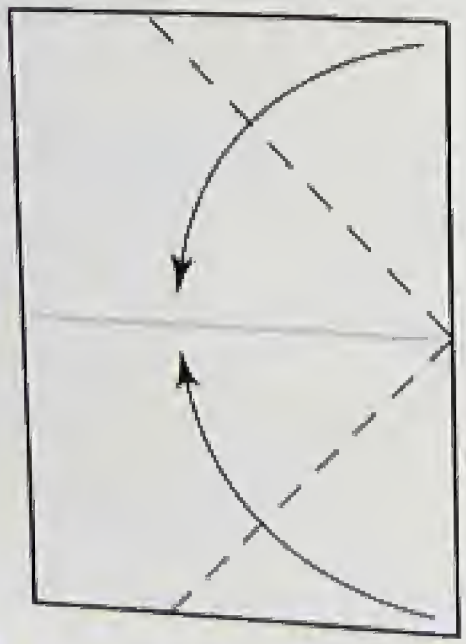
Design by Nick Robinson

9 STEPS

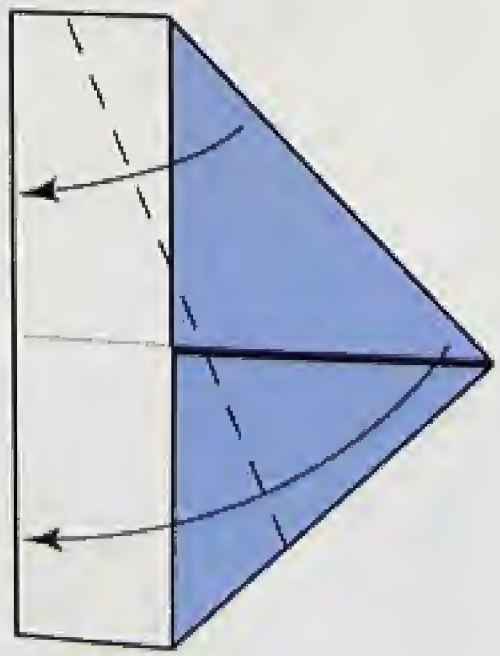
The shapes of these dissection puzzles are fairly simple and not difficult to create with paper. The challenge is to achieve them using an efficient sequence of folds and to keep each unit neat and tidy, as well as locked together by overlapping papers. When you have run out of ideas starting with a square, you can then investigate the possibilities of a rectangle. The author created this design following a series of 'fold exchanges' with a fellow paper-folder David Mitchell, who has a keen interest in elegant geometric folding.

Paper size:
25 cm (10 in.) long
Finished puzzle
Each unit ¼ of original rectangle

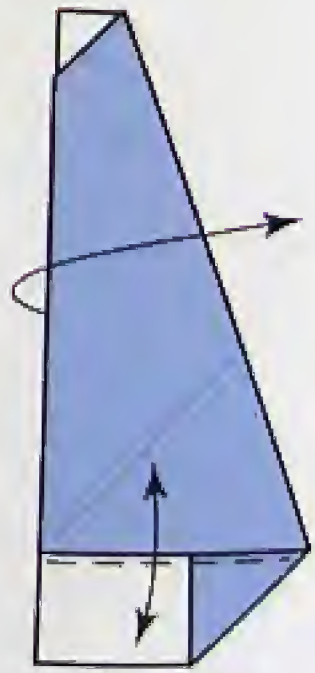




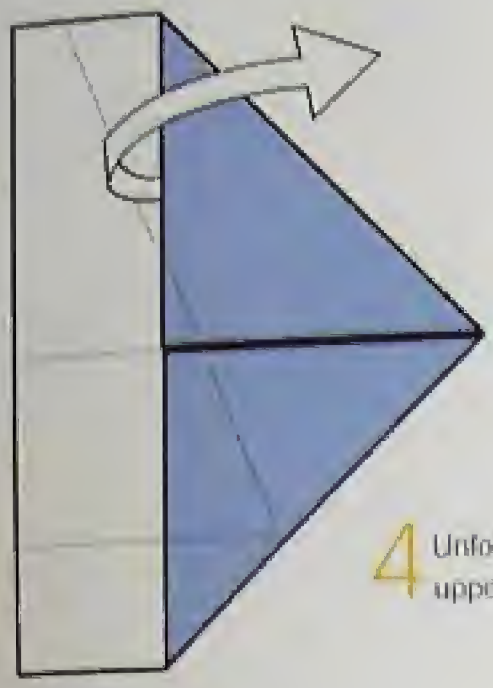
1 Start with a rectangle, creased in half. Fold each half of one side to the centre crease.



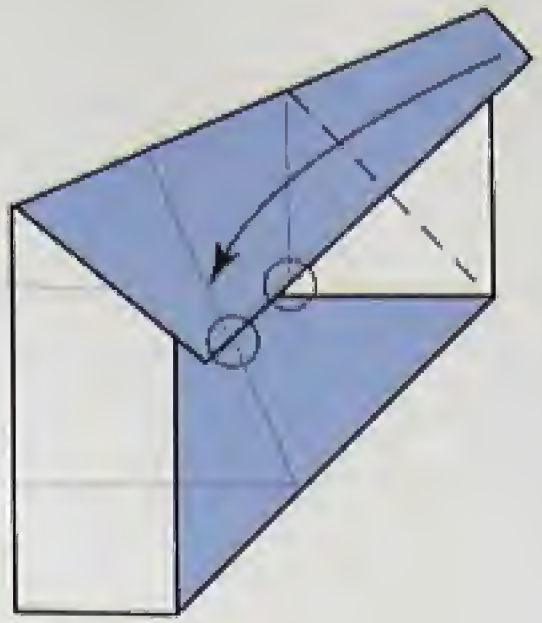
2 Take the upper folded edge to lie along the vertical raw edge.



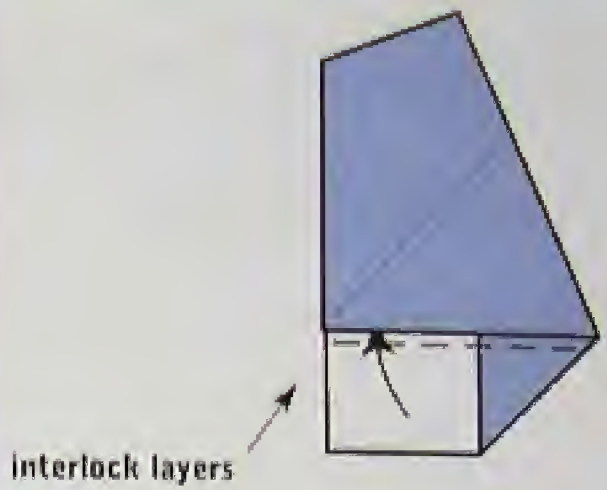
3 Crease along the lower folded edge, then unfold to Step 2.



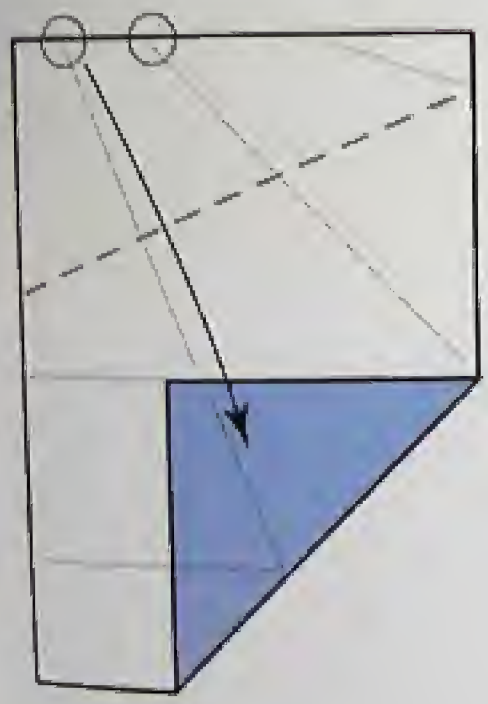
4 Unfold the upper flap.



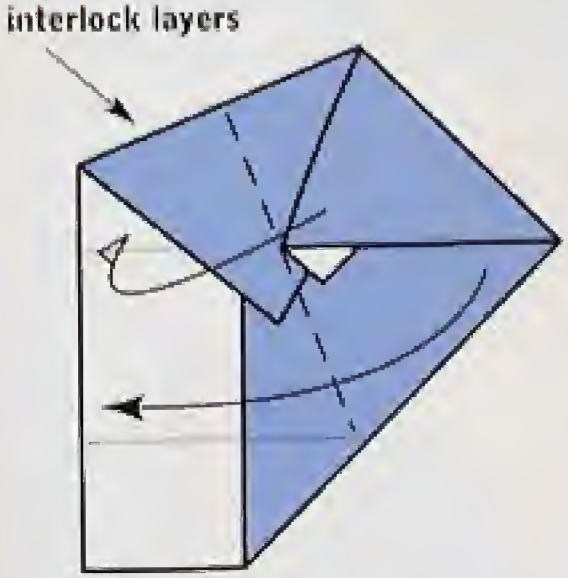
6 This should be the result. Fold a flap over on an existing crease.



8 Tuck the lower flap inside, interlocking layers as you do so.

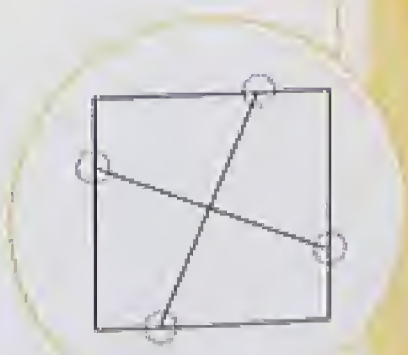


5 Note the circled reference points and check the next diagram to see where they will end up. Then fold the longest crease back down along its own length until the reference points meet.



7 Again using an existing crease, fold the right half over, interlock layers to hold the paper together.

9 The unit is complete. This dissection puzzle works in the same way as the square-based version. Here is the alternative solution.



FOLDER'S TIP

Pasquale D'Auria of Italy had the bright idea of joining the units with string or rubber bands in the circled locations. The design turns inside out, alternating between one solution and the other. You can hide the bands within the paper.

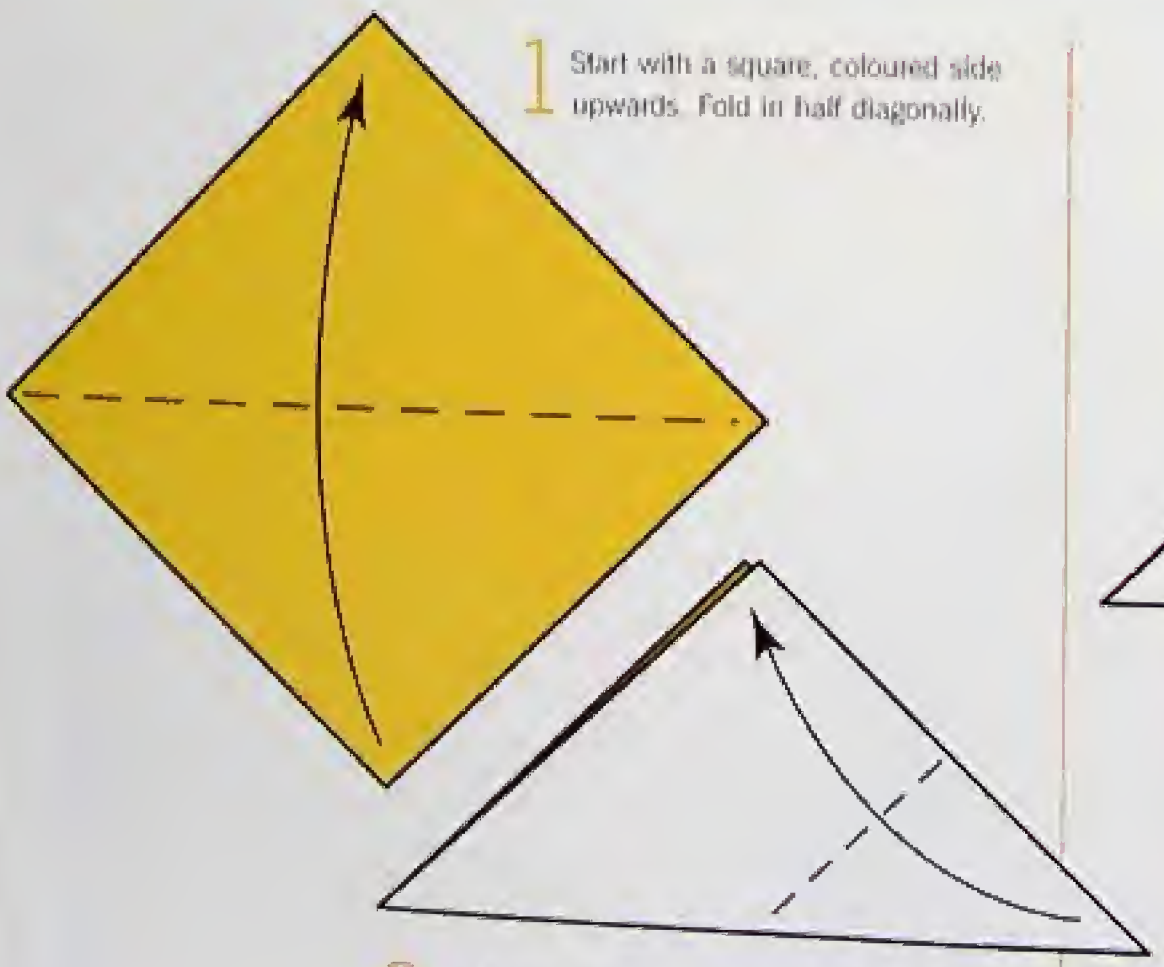
TEN-POINT STAR

Design by David Collier

10 STEPS

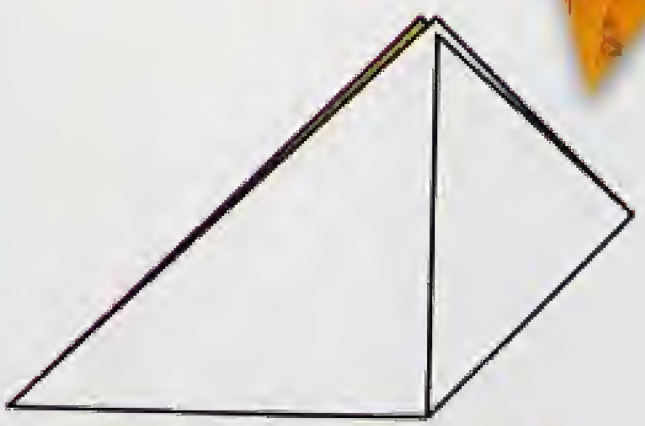
There seems to be no limit to the number of ways in which you can combine simple units into a ring to form stars or wreaths. Some folders from the Netherlands even use tea bags! However, you should still look for simplicity and elegance, amply demonstrated in this star by the late David Collier of England.

Paper size:
10 cm (4 in.) square
Finished star:
25 cm (10 in.) high



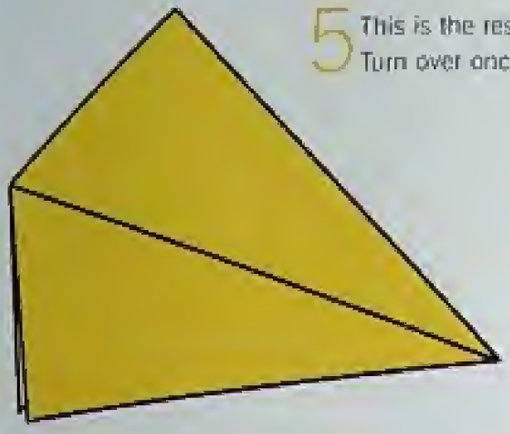
1 Start with a square, coloured side upwards. Fold in half diagonally.

2 Fold the lower right corner to meet the top corner.

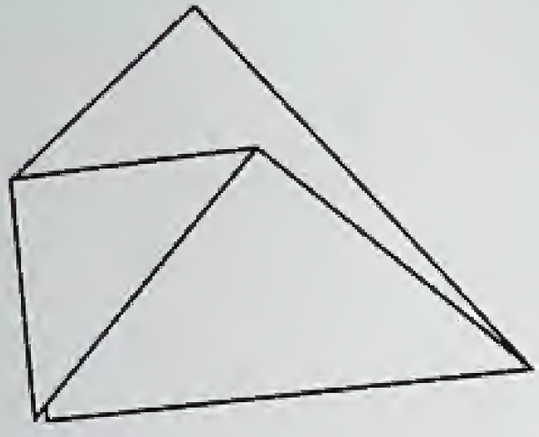


3 This is the result. Turn the paper over.

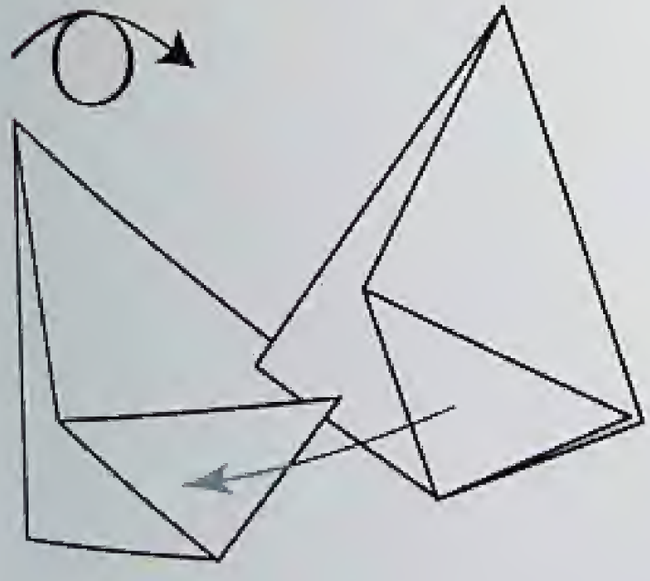
4 Fold down the first layer as far as it will go without tearing the paper.



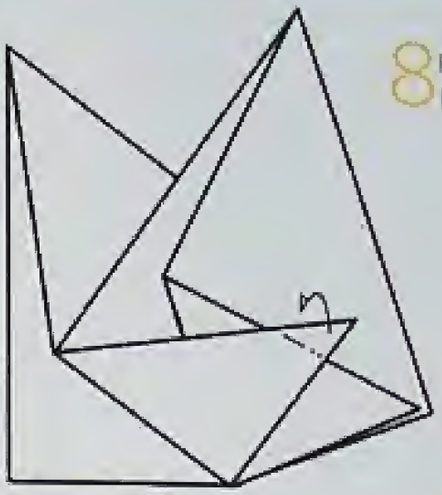
5 This is the result. Turn over once more.



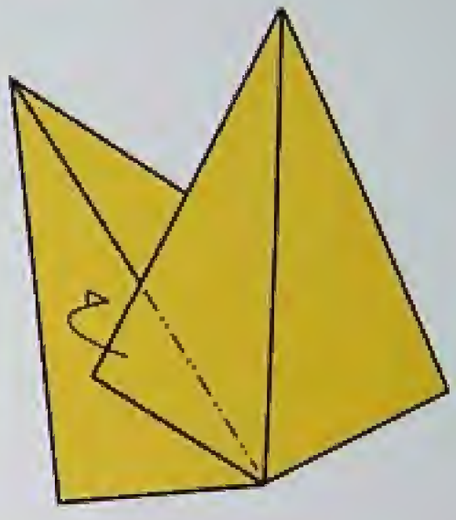
6 This is the completed unit. Now make another nine.



7 Slide one unit into another, as far as it can go.



8 Fold the tip of the flap behind to hold it in place.



9 Turn the paper over. Fold the larger flap inside to complete the lock.

10 Repeat with all the units to form the star.

INTERMEDIATE PROJECTS

These designs focus on geometric subjects and other interesting designs, chosen to show the many different styles and subjects that are all part of origami. Often, looking at (for example) a cube, you might wonder where the fun is in folding such a basic shape. The answer is in the question – it is the folding that provides the enjoyment as much as looking at the finished object. The challenge is in folding neatly and producing perfect results.

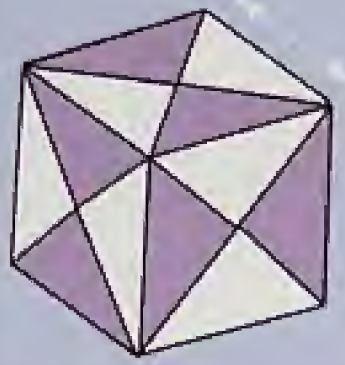
MODULAR CUBE

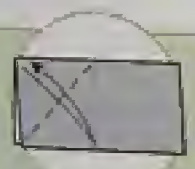
Based on a unit by Mitsonobu Sonobe

12 STEPS

Although a basic shape, the cube holds endless fascination for creative paper-folders, who are always looking for new ways of designing one. Add to this the many possibilities for patterns on the face of a cube and you have the potential material for a lifetime's folding! As with any modular design (where several simple units are assembled to create a more complex whole), you need to fold accurately, or the result will not hold together well or look attractive.

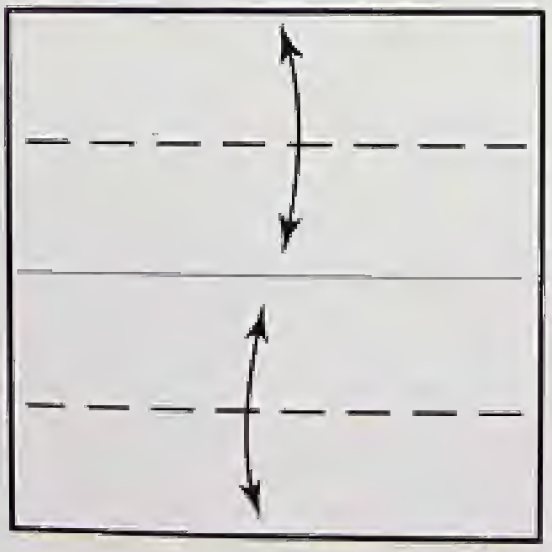
Paper size:
25 cm (10 in.) square
Finished cube:
13 cm (5 in.) wide



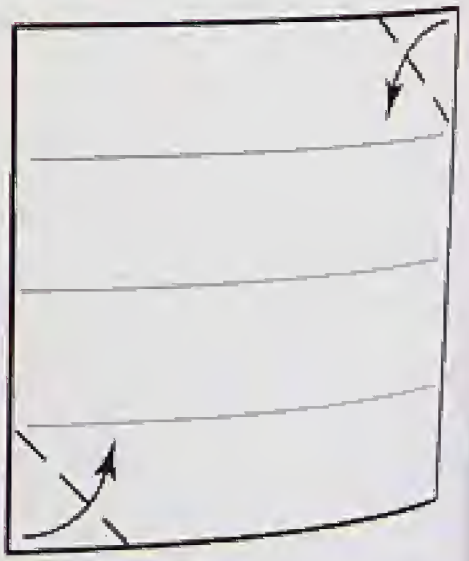


INSIDE REVERSE
REMINDER

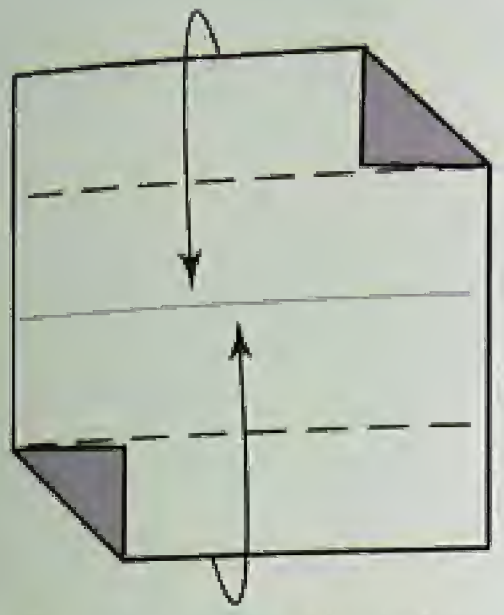
1. Make a pre-crease.
2. Push the point inside.
3. Complete.



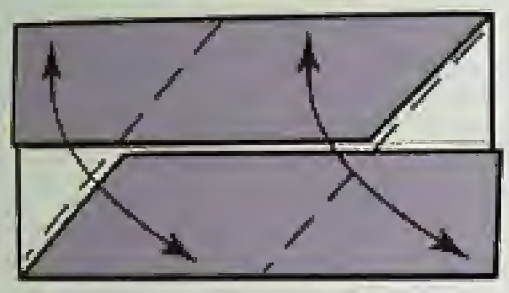
1 Start with a square, white side towards you, creased in half. Fold opposite sides to the centre, crease firmly and unfold.



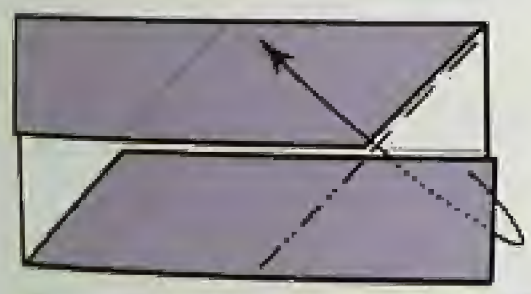
2 Fold the opposite corners marked in the diagram to the quarter creases.



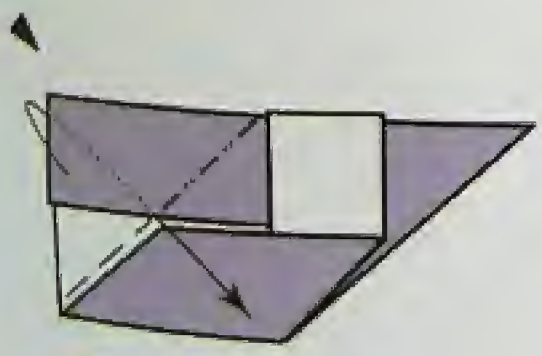
3 Refold along the quarter creases.



4 Pre-crease neatly where shown.

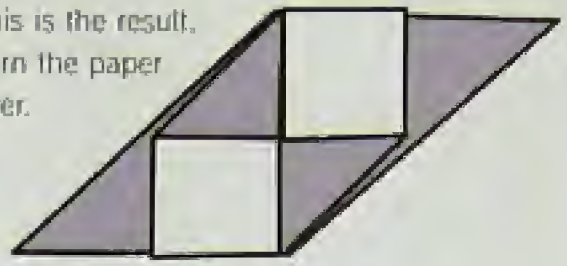


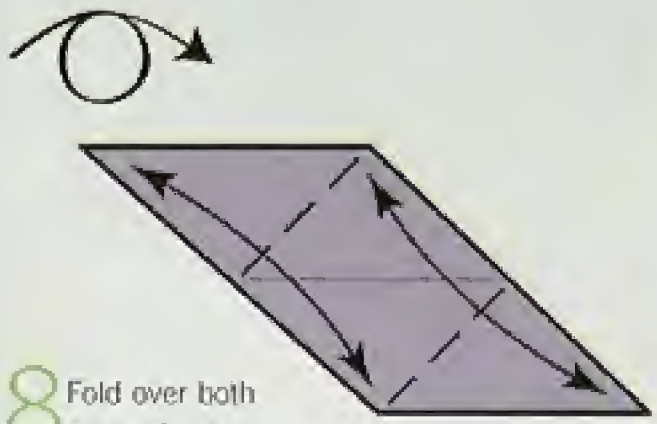
5 Inside-reverse fold the corner, (see reminder panel, left).



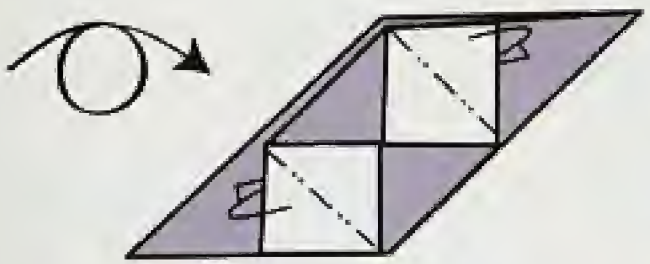
6 Repeat on the diagonally opposite corner.

7 This is the result. Turn the paper over.



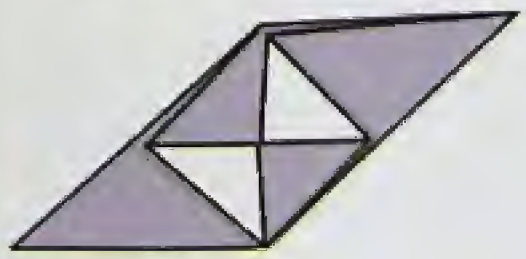


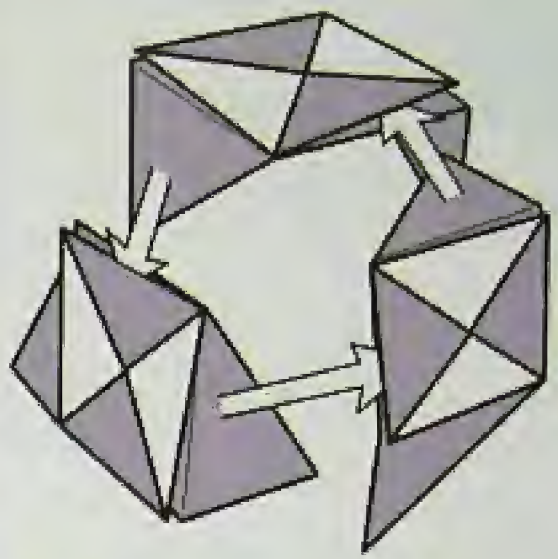
8 Fold over both triangular flaps (through all layers), crease and unfold.



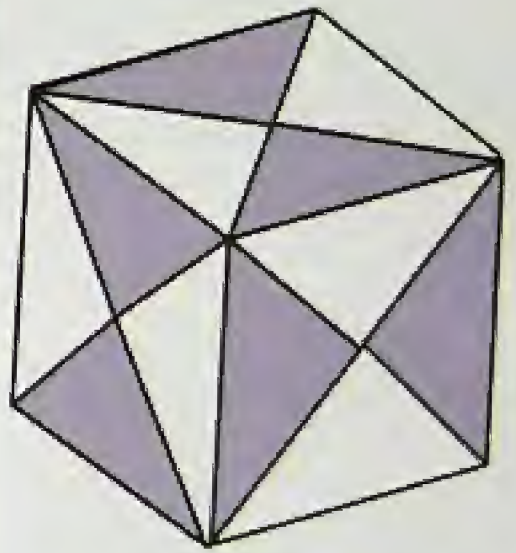
9 Turn over again, then tuck the outside white triangles into the pockets underneath.

10 This is the completed unit. Make six in total.





11 Assemble as shown. Make sure the coloured triangle tucks into the pocket formed by the white flap folded inside in Step 9. Assemble all six units loosely, then tighten.



12 The completed cube.

CHALLENGE

There are many different polyhedra you can create with this unit. Try assembling eight, twelve and then thirty units. How about combining three to form a triangular pyramid unit?

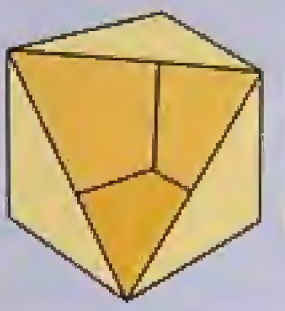
OPEN CUBE

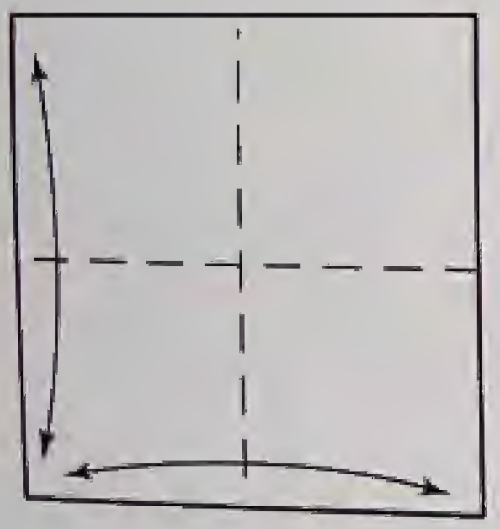
Design by Nick Robinson

14 STEPS

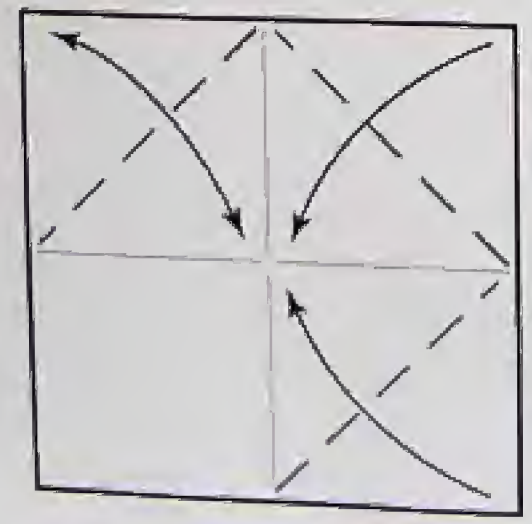
Here's another example of an origami cube, this time with a section sliced off. As with many geometric designs, there is something very pleasing to the eye and mind about the various angles that are revealed as you rotate the cube. With this type of design, it is important to work hard on the sequence to make it efficient (so that all the required creases are correctly oriented as valley or mountain) yet also smooth and enjoyable to follow.

Paper size:
30 cm (12 in.) square
Finished cube:
10 cm (4 in.) high

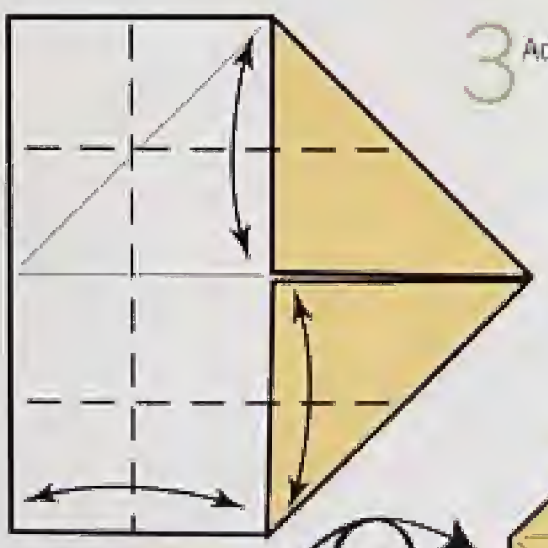




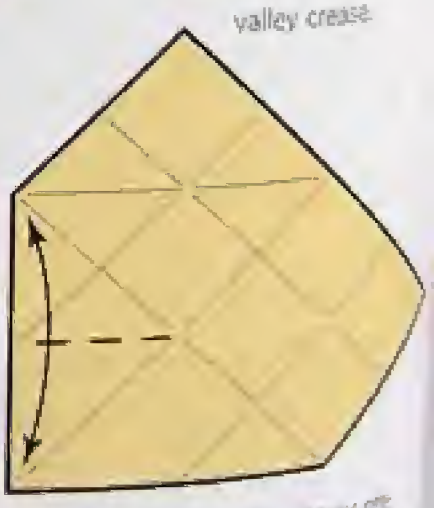
1 Start with a square, white side upwards. Crease in half both ways.



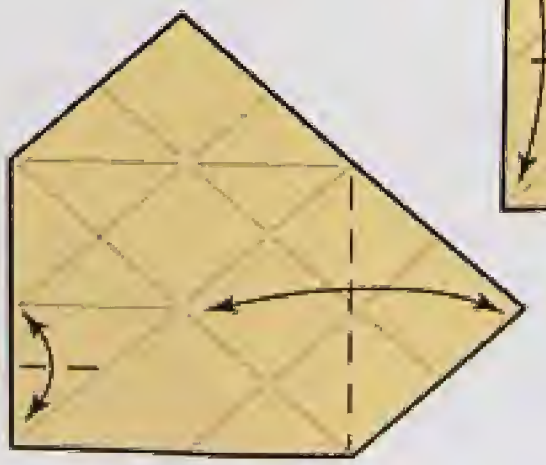
2 Fold two adjacent corners to the centre. Fold a third corner to the centre, crease and unfold.



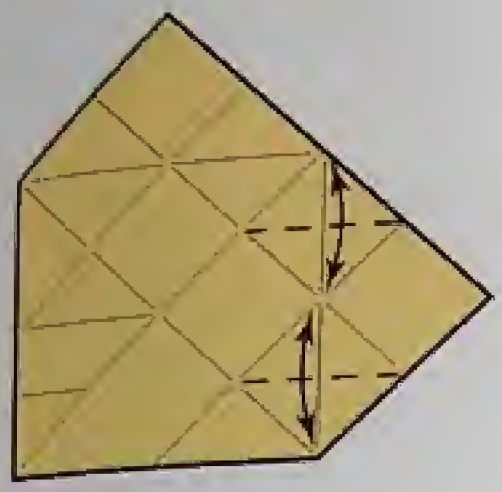
3 Add quarter creases, as shown.



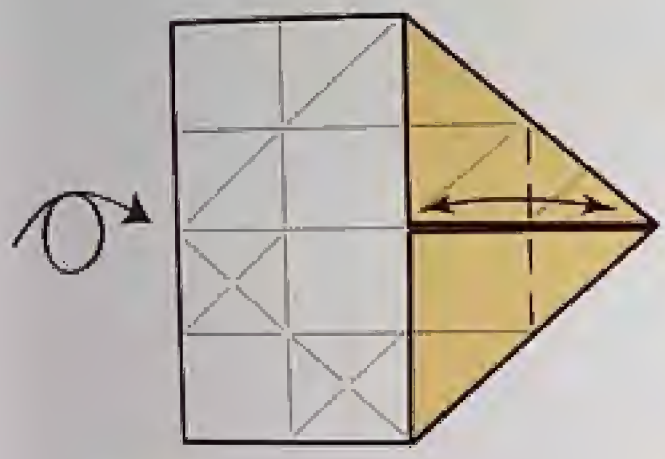
4 Turn the paper over and add a short valley crease.



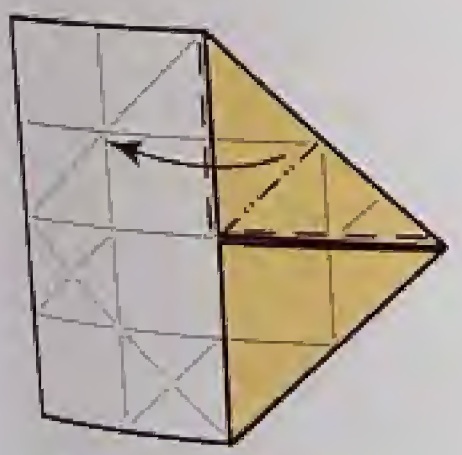
5 Make an even shorter pre-crease, half of the previous distance. Pre-crease on the right as well.



6 Make two more pre-creases.

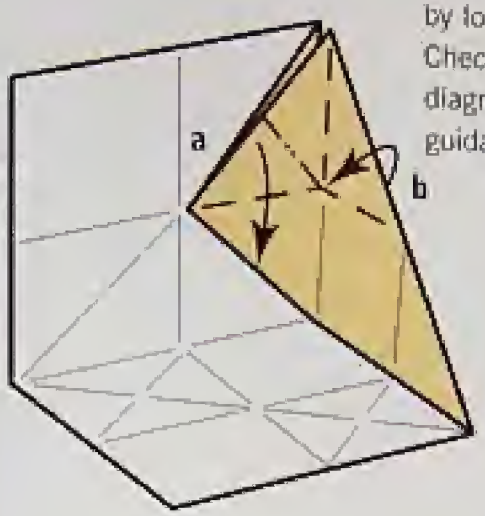


7 Turn the paper over and add one final pre-crease. Now the folding begins.

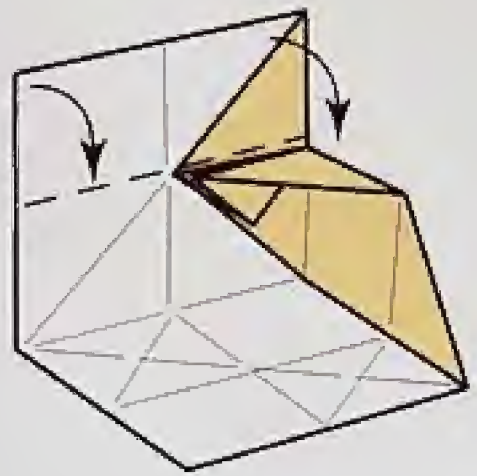


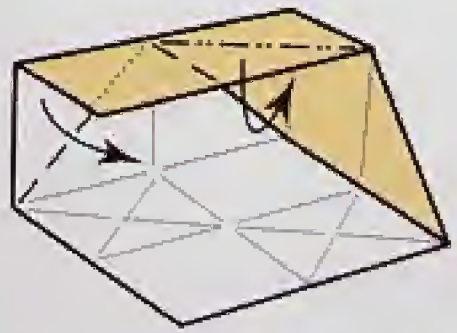
8 Raise the paper into three dimensions using the creases shown.

9 Make fold (a), closely followed by fold (b). Check the next diagram for guidance.



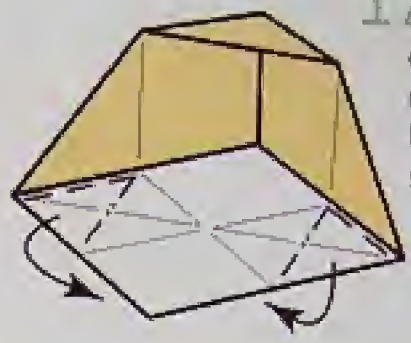
10 Fold the top section down at 90 degrees.



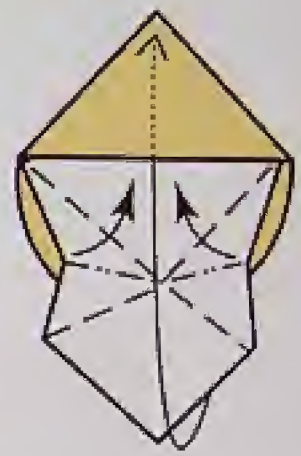


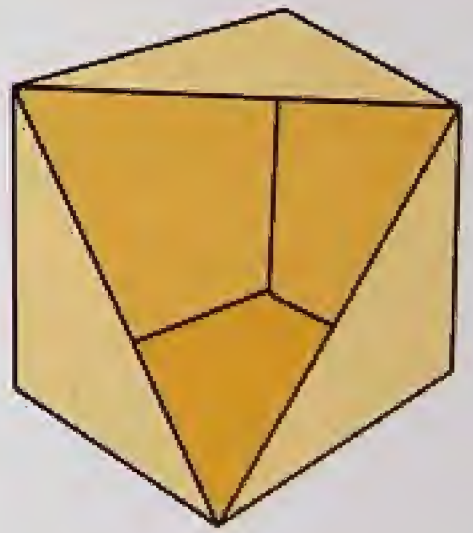
11 Use the mountain fold to tuck paper underneath and right into the corner.

12 Nearly there now. Start to raise the lower white sheet.



13 Form a small waterbomb base as you gently ease the paper inside. The outer corner finishes at the opposite corner.





14 The completed cube.

ALSO SEE
Waterbomb base page 29

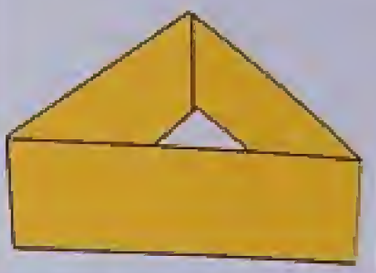
TRIANGULAR BOX

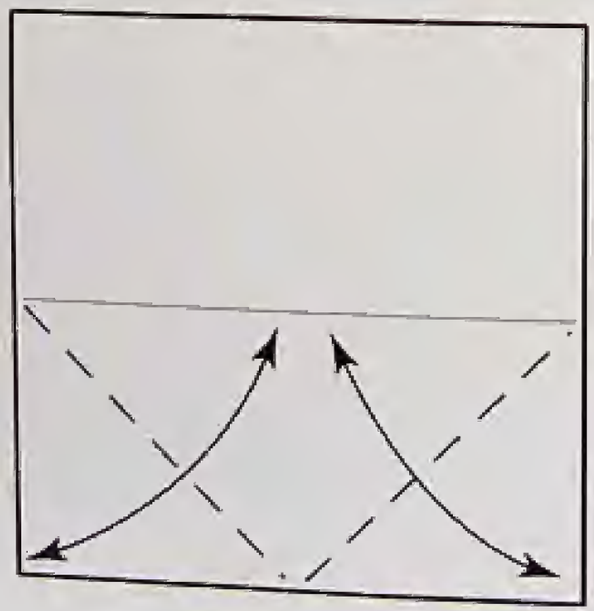
Design by Nick Robinson

18 STEPS

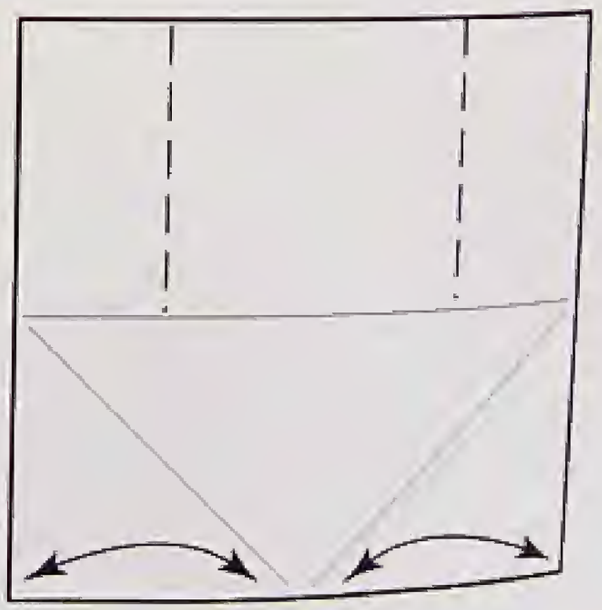
This is an example of a design that may not be very exciting to look at, but contains a number of pleasing moves and techniques. Arguments rage in the origami world as to whether the sequence or the end result is the most important. With geometric designs, it's often the sequence – looking at the model isn't nearly as much fun as folding it! In this design, trouble has been taken to ensure that both the outside and the inside of the finished model are free from all creases. In order to achieve this, some creases don't extend as far as they could, which adds to the folding challenge. Try to fold neatly and accurately.

Paper size:
25 cm (10 in.) square
Finished box:
6 cm (2½ in.) high

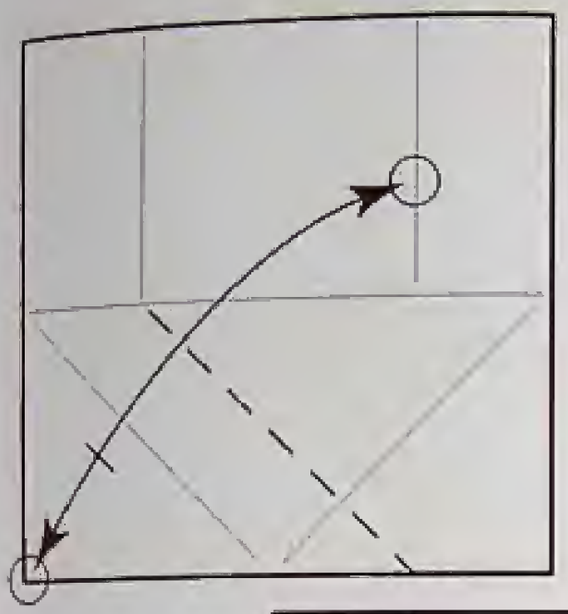




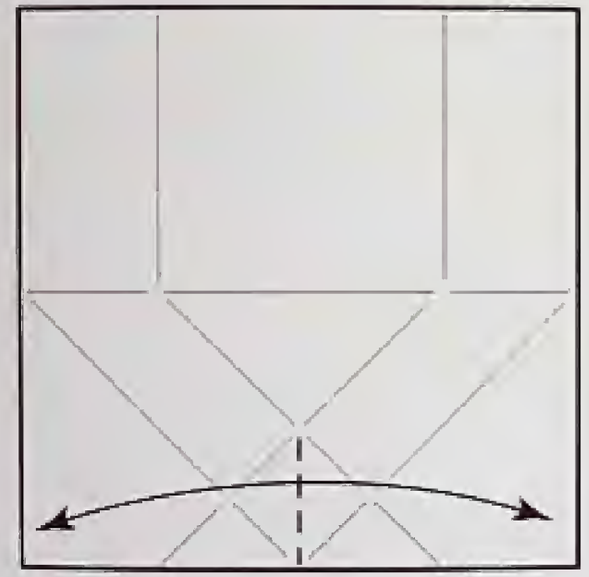
1 Start with a square, creased in half. Fold two corners to the centre crease, crease and unfold.



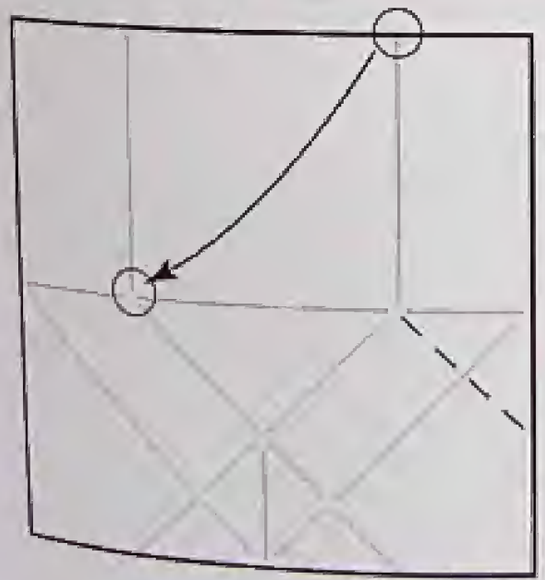
2 Mark the
quarter
in the
the oth



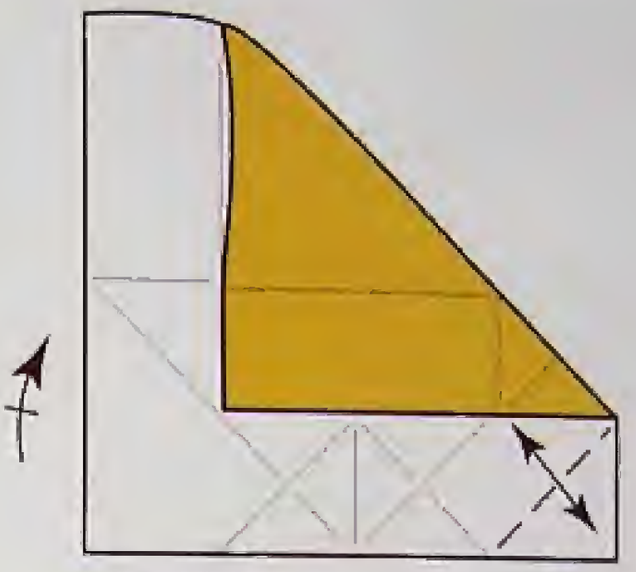
3 Fold the lower edge so it lies along the right-hand vertical quarter crease. Crease and unfold. Repeat on the other side.



4 Add a small valley fold at the bottom of the sheet.

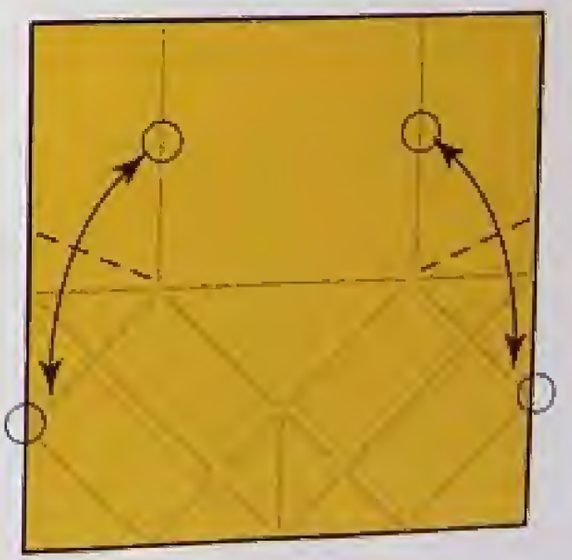


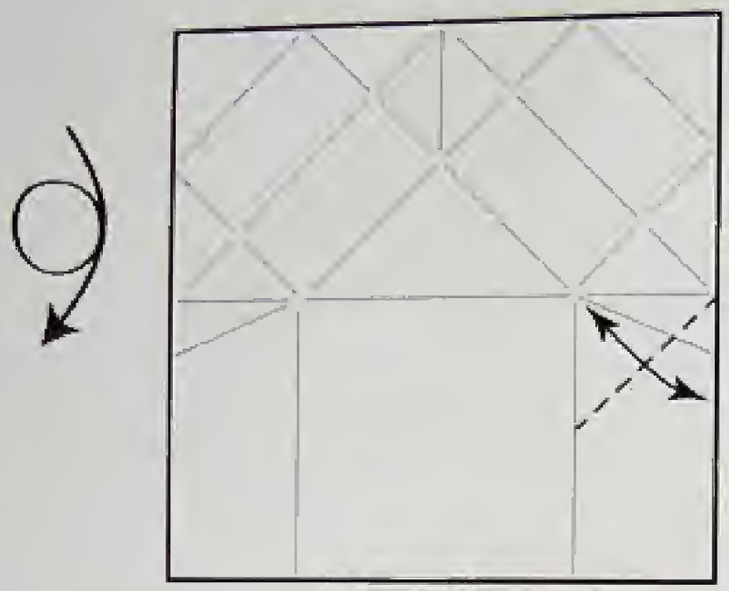
5 Fold so the indicated points meet. Only crease where shown.



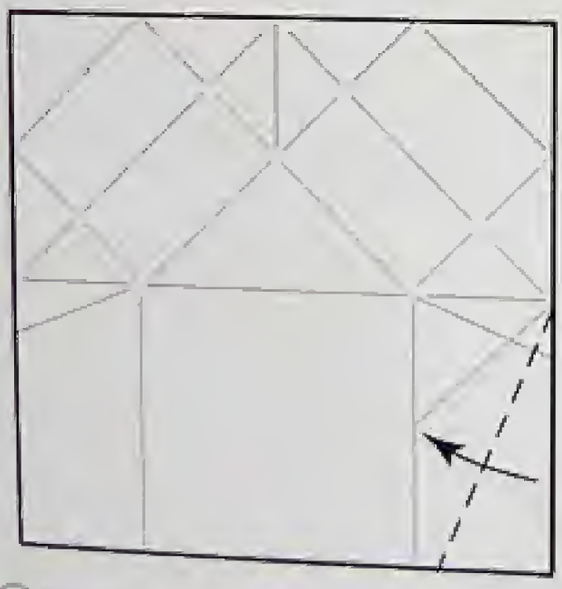
6 Fold the lower corner to meet the raw edge, crease and unfold.

7 Turn the paper over and use the location points to add two short creases.

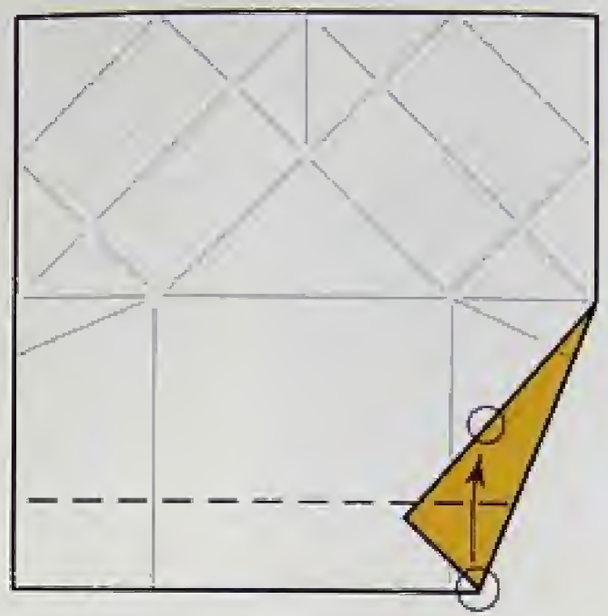




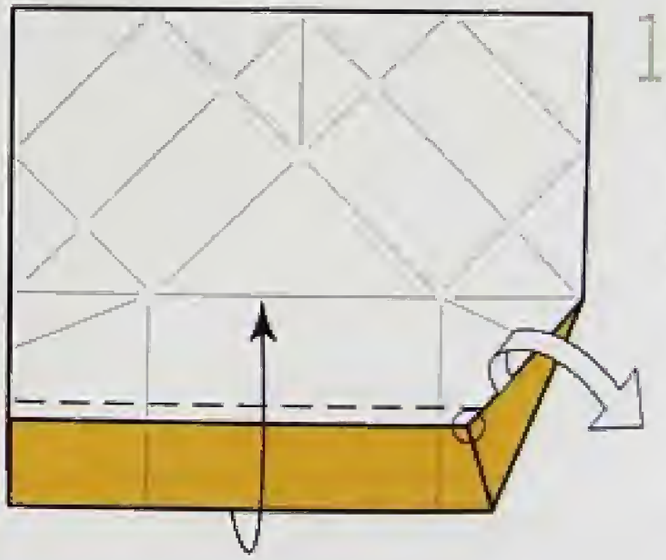
8 Turn back to the white side. Fold the right edge to the horizontal halfway crease, creasing only up to the quarter crease.



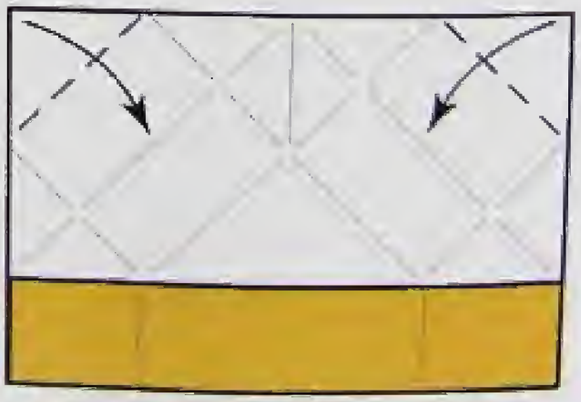
9 Fold the same side to the new crease.



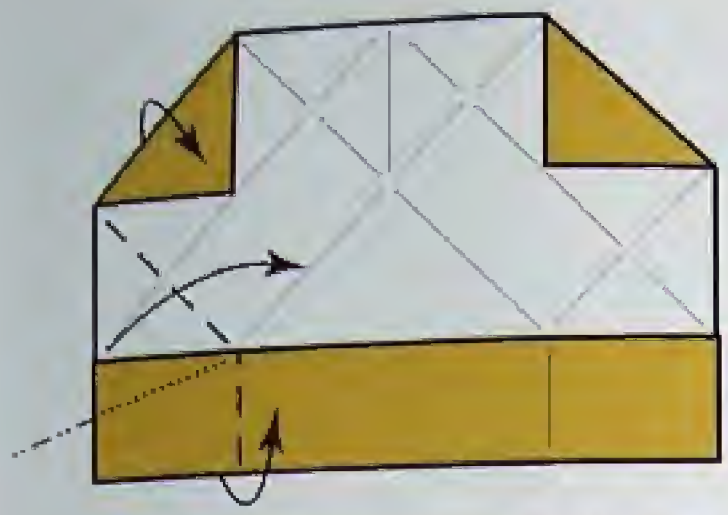
10 Take the lowe right corner u to lie on the coloured edge Use the quarter creases to ensure you are folding a right angles



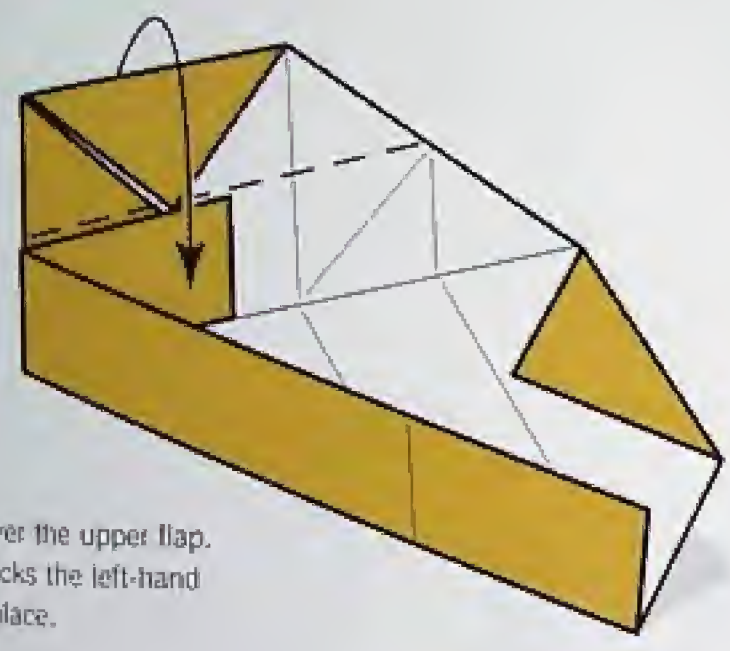
11 Pull out the paper folded over in Step 9 Fold the lower edge to lie exactly on the horizonta halfway crease



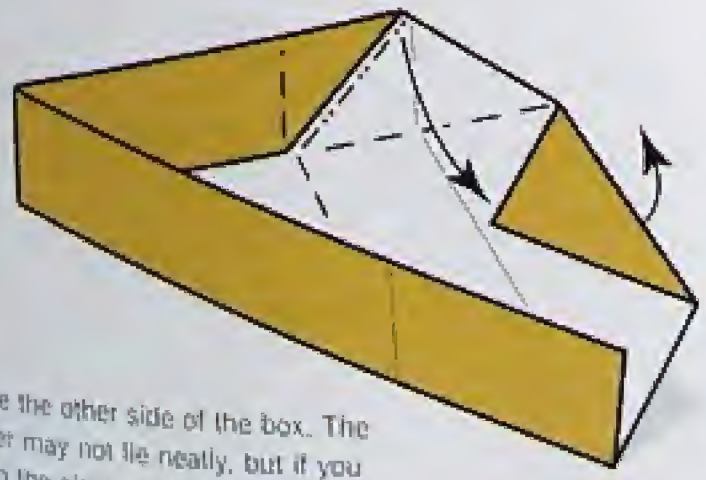
12 Fold in the upper corners



13 Use the creases shown to raise two sides and form a corner of the box. The dotted line indicates an existing mountain crease underneath. Check the next diagram for guidance.

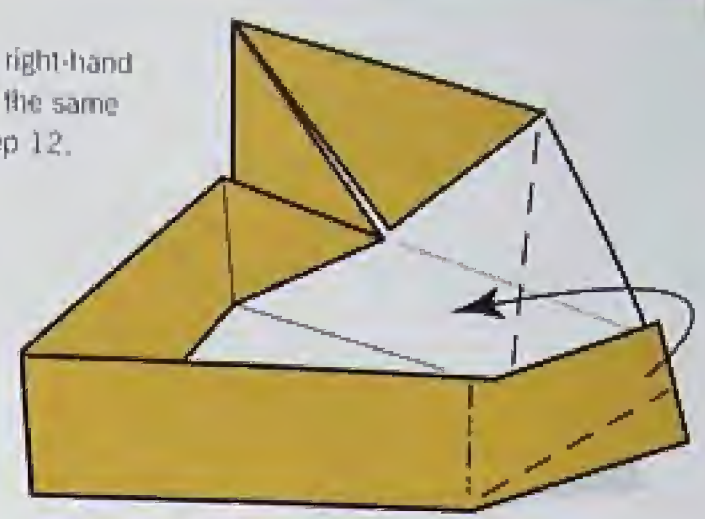


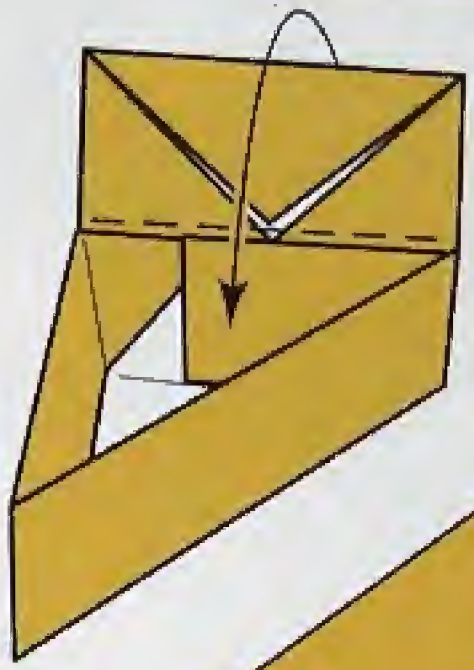
14 Fold over the upper flap. This locks the left-hand corner in place.



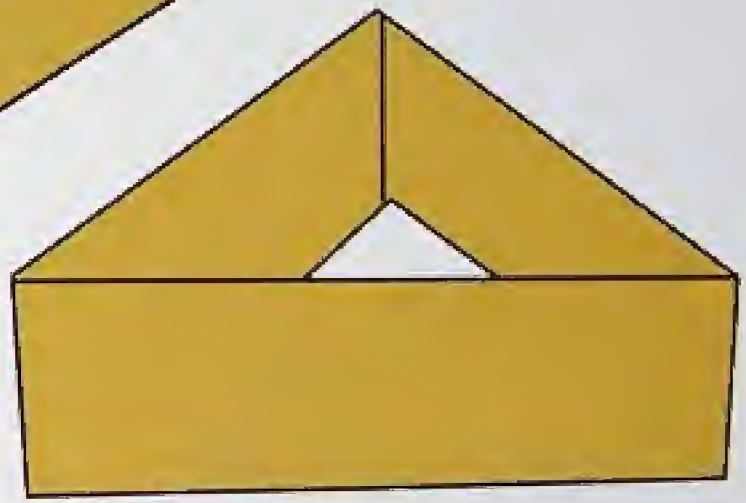
15 Raise the other side of the box. The paper may not lie neatly, but if you hold it in the air, you'll be able to manage.

16 Form the right-hand corner in the same way as in Step 12.





17 Tuck the flap inside.



18 The completed model.

CHALLENGE

Fold two similar boxes, then create a square box to put them in. Re-examine the folding sequence. Can you find another way of locating the crease in Step 11?

SKELETAL CUBE

Design by Jeff Beynon

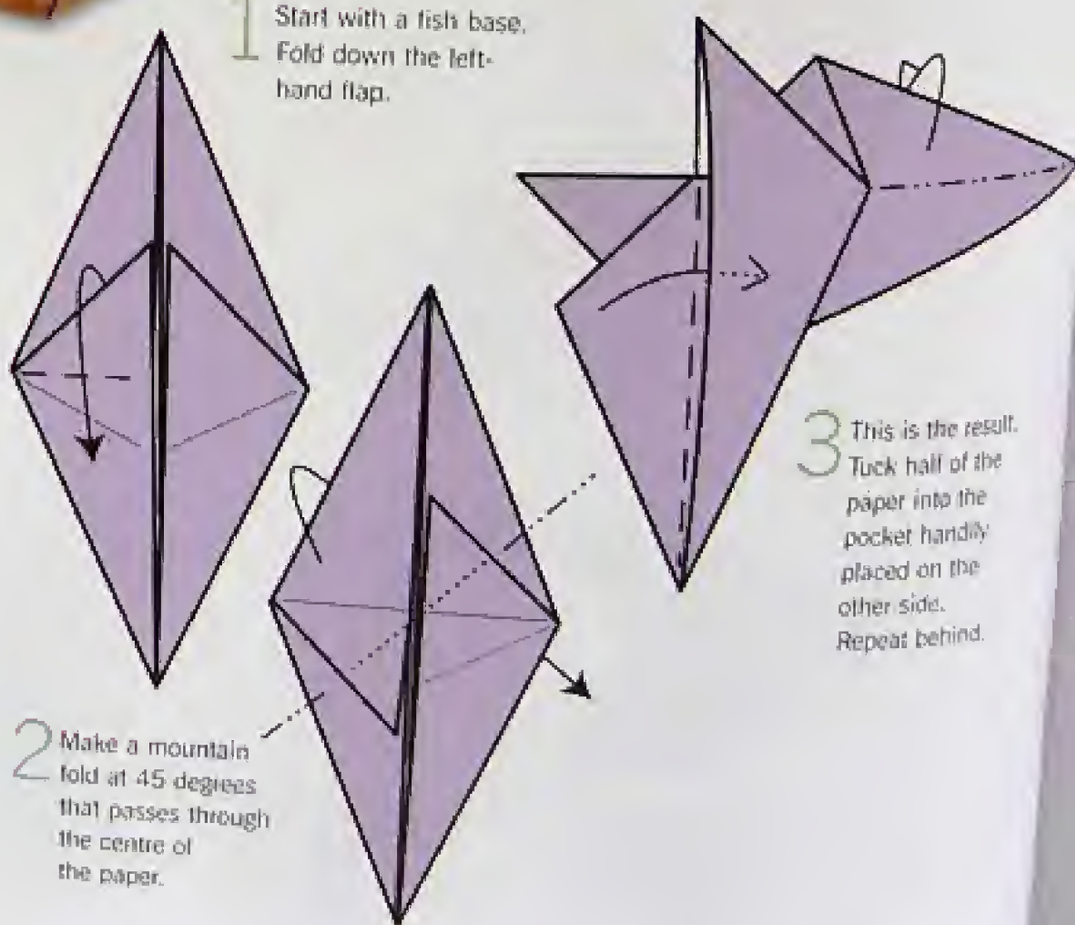
8 STEPS

Simple folds can be joined together to form fascinating and apparently complex shapes. This design is a perfect example. Starting with the familiar fish base (see reminder panel, right), Jeff adds a few extra creases and builds a skeletal cube from twenty-four units. There are also many other ways in which you can combine different numbers of these units.

FISH BASE REMINDER

1. Fold two sides to a diagonal.
2. Fold in half behind.
3. Pull down both corners.
4. Complete.

Paper size:
25 cm (10 in.) square
Finished skeletal cube:
25 cm (10 in.) high

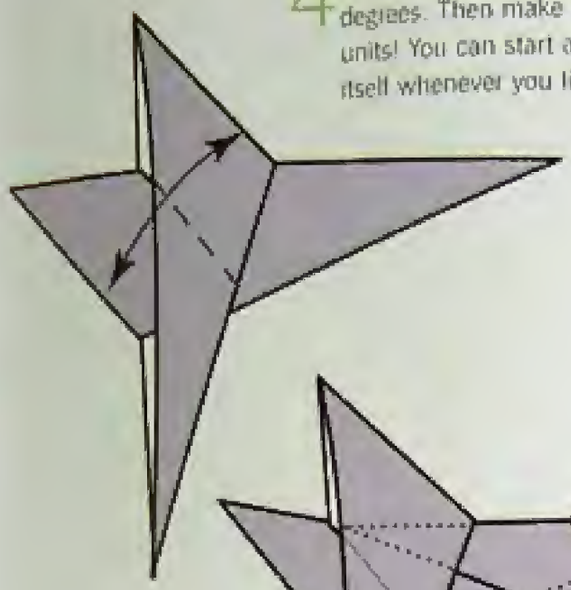


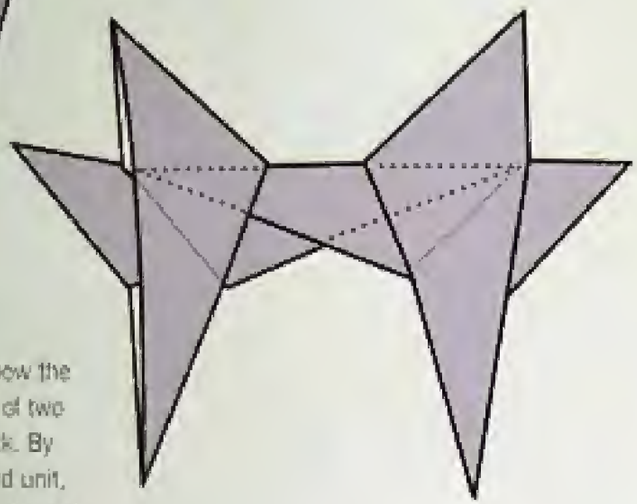
1 Start with a fish base. Fold down the left-hand flap.

2 Make a mountain fold at 45 degrees that passes through the centre of the paper.

3 This is the result. Tuck half of the paper into the pocket handily placed on the other side. Repeat behind.

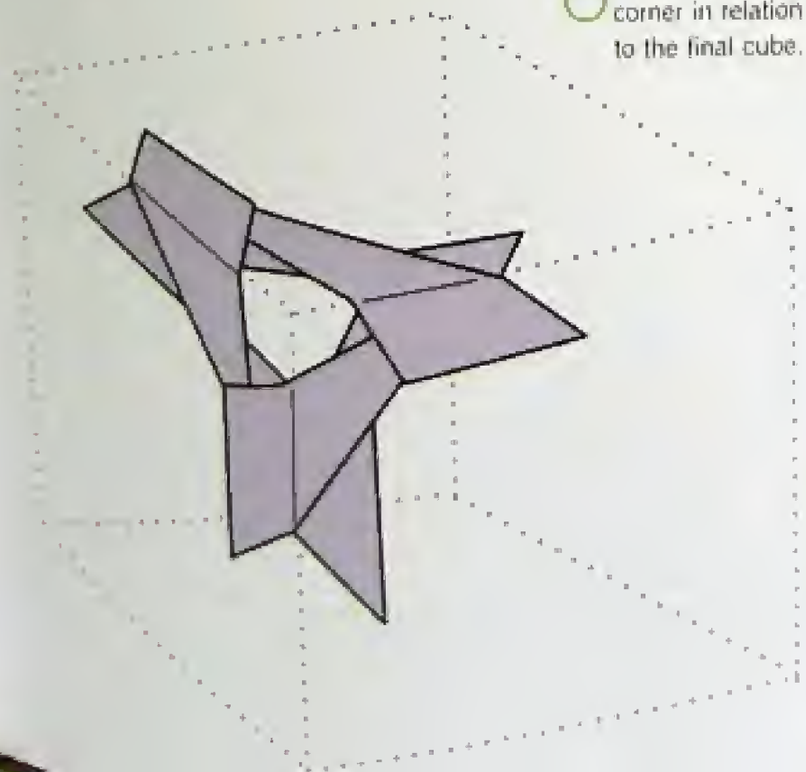
4 Fold the unit in half, crease and unfold to 90 degrees. Then make another twenty-three units! You can start assembling the model itself whenever you like.



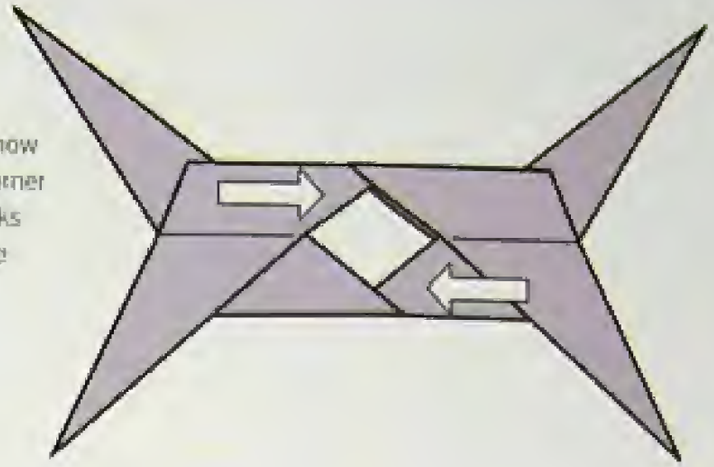


5 This shows how the sharp points of two units interlock. By adding a third unit, you form a corner of the cube.

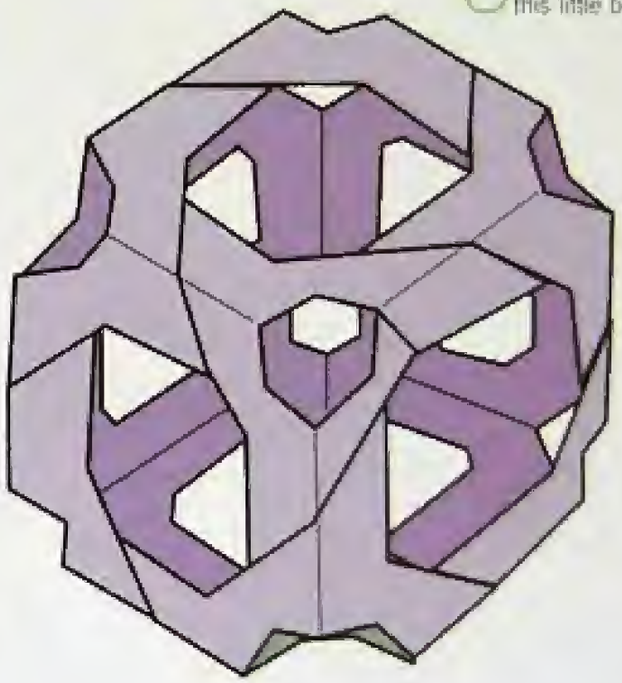
6 This shows the corner in relation to the final cube.



7 Here's how each corner interlocks with the next.



8 Eventually, you'll produce this little beauty.



CHALLENGE

Can you form any other polyhedra apart from a cube? For example, by joining two or four units and combining them with three units.

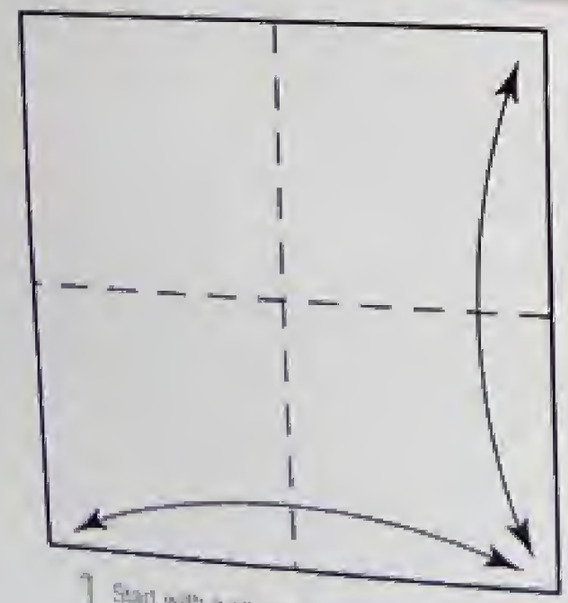
ALI'S DISH

Design by Nick Robinson

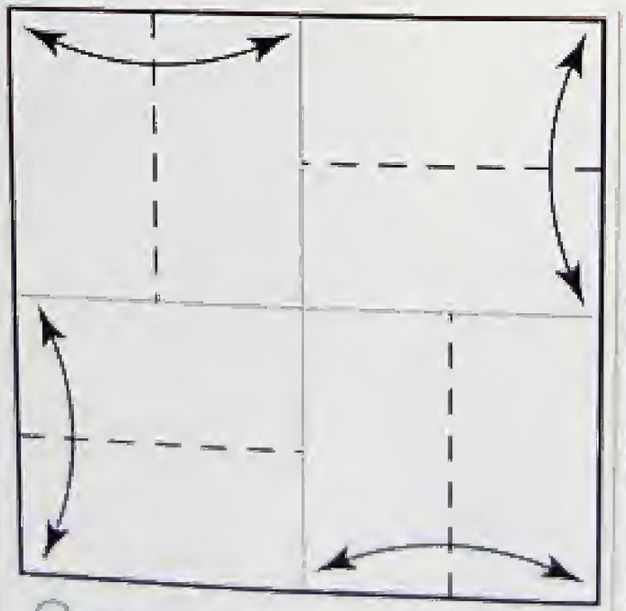
8 STEPS

Paper size:
20 cm (8 in.) square
Finished dish:
15 cm (6 in.) wide

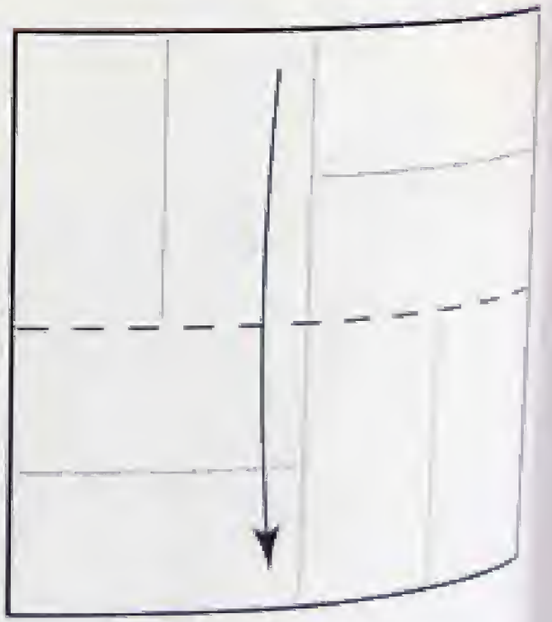
For many years the author has had a passion for creating origami dishes, inspired by the superb work of origami master Philip Shen. The aim is to create designs that are elegant, efficient and accurately creased, and that hold together with minimal use of origami techniques. The best designs often seem simply to emerge from a set of familiar creases, as if they had been lying there waiting to be discovered.



1 Start with a square, white side upwards. Crease from side to opposite side both ways.

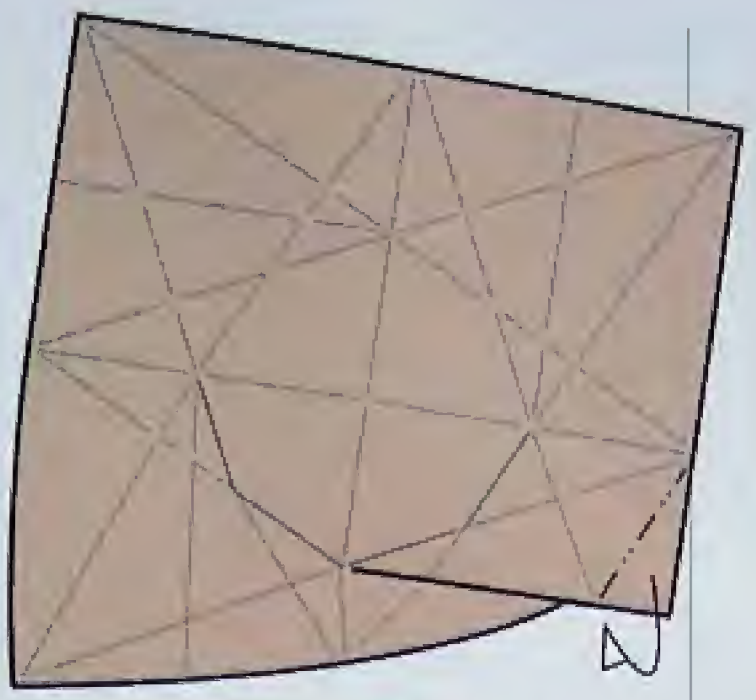


2 Add quarter creases that only extend as far as the centre crease.



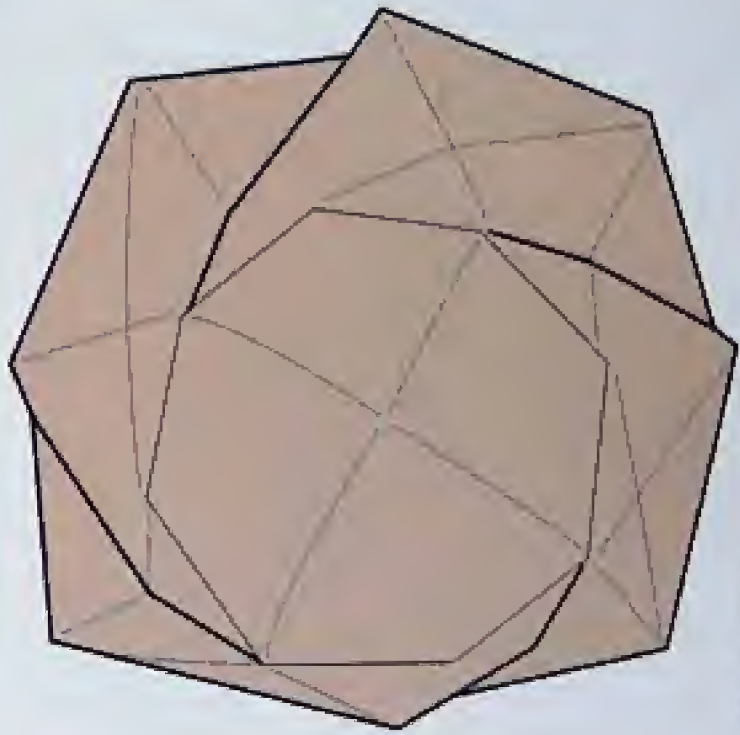
3 Fold in half from top to bottom.

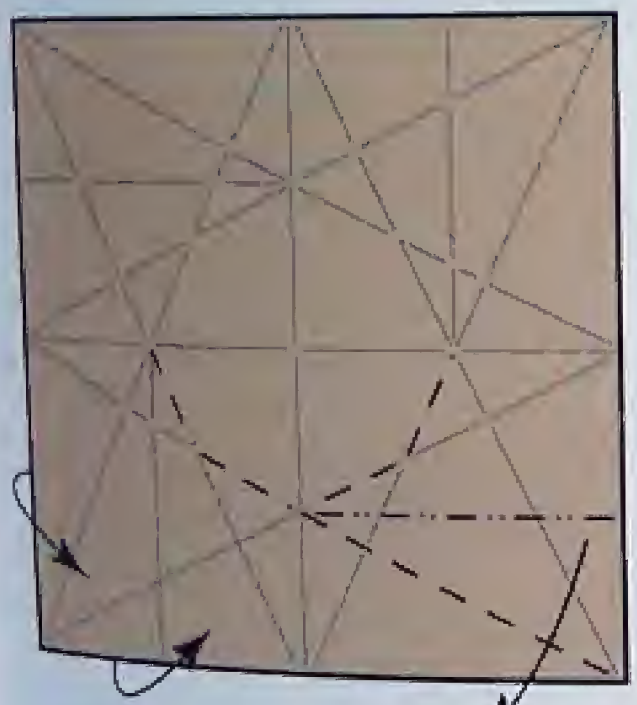
4 Add both diagonals in the 2 x 1 rectangle. Repeat on the other side, then open out, fold in half the other way and repeat on both sides.



6 Fold the flap behind on an existing crease.

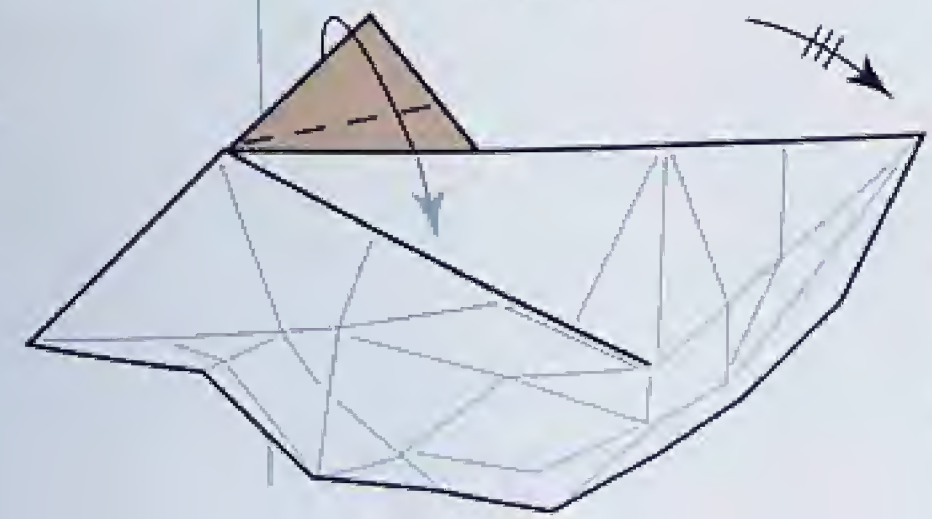
8 Gently press in the centre from underneath, encouraging the dish to become slightly rounded.





5 Open back out to the coloured side. Form the paper into three dimensions, concentrating on the mountain crease. The centre of the paper forms the centre of the dish, so the sides should come up slightly.

7 Here is the same fold seen from the side. Tuck it behind the layer of paper. Repeat on the three remaining sides.



CHALLENGE

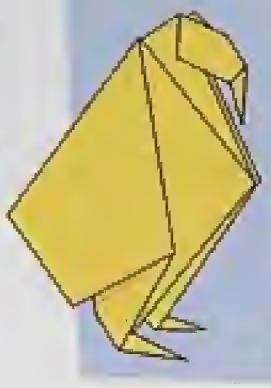
Look at the final dish – several of the creases are not used. Mark them with a pen, then unfold and try to create the same dish without these creases. It will mean creasing only part of the way in Step 3.

BABY EAGLE

Design by Lore Schirokauer

17 STEPS

When creating a bird, many folders naturally start with a bird base, as it has clear points for creating wings, heads or legs. You can, however, use other bases as starting points or – as with this design – a combination of bases. This fold starts with a preliminary base, one side of which is folded into half of a bird base. The other side (with a slight modification) becomes half of a frog base. This combination allows you to position the flaps and points in different places to the standard bird base.



Paper size:
20 cm (8 in.) square
Finished baby eagle:
15 cm (6 in.) high

BIRD BASE
REMINDER

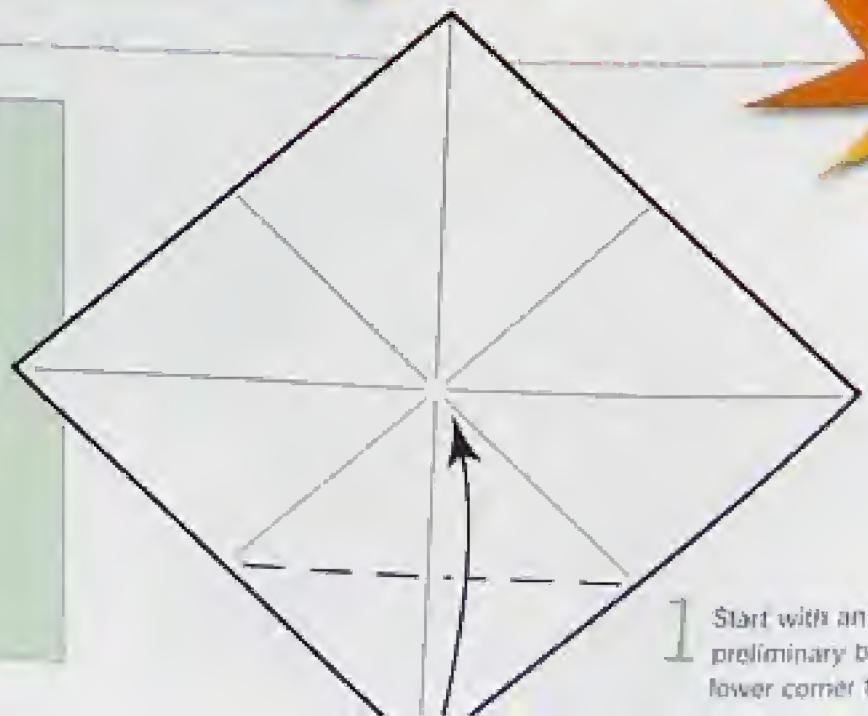
1. Preliminary base, fold sides to the vertical.

2. Fold the top section down.

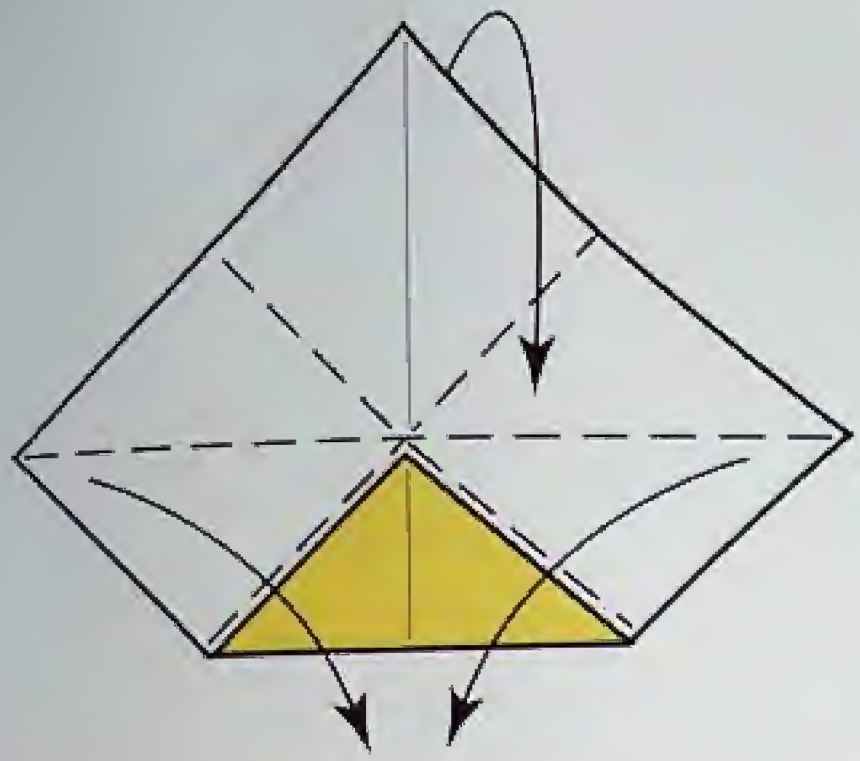
3. Pull out the flaps from underneath.

4. Lift the lower corner carefully. Repeat behind.

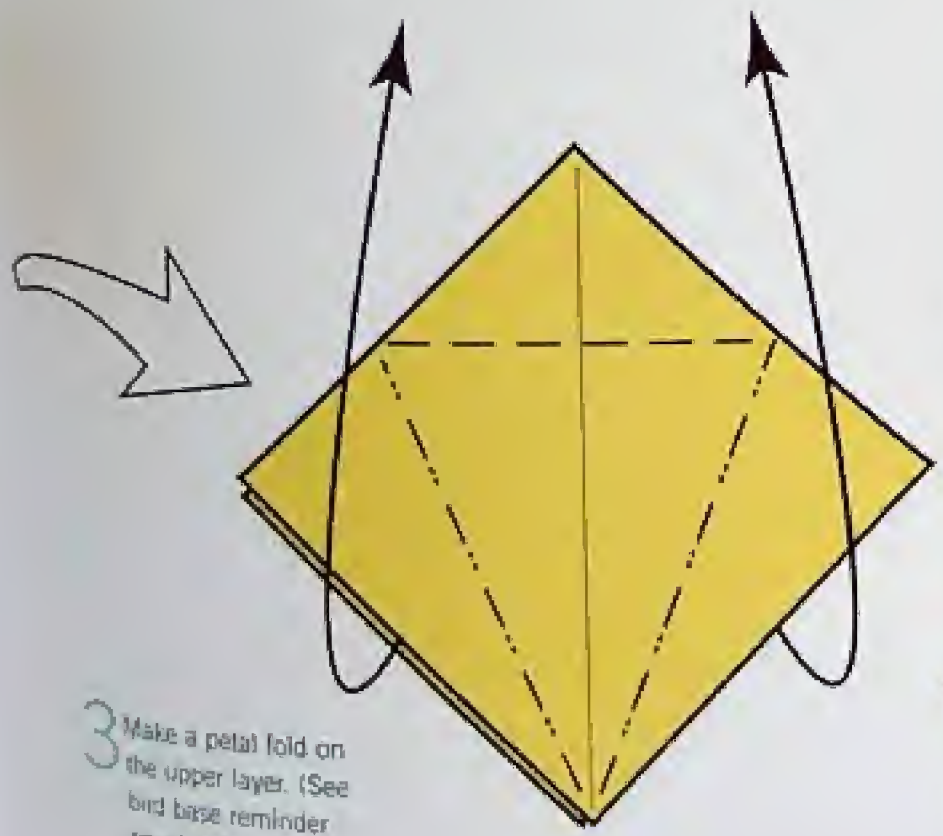
5. Complete



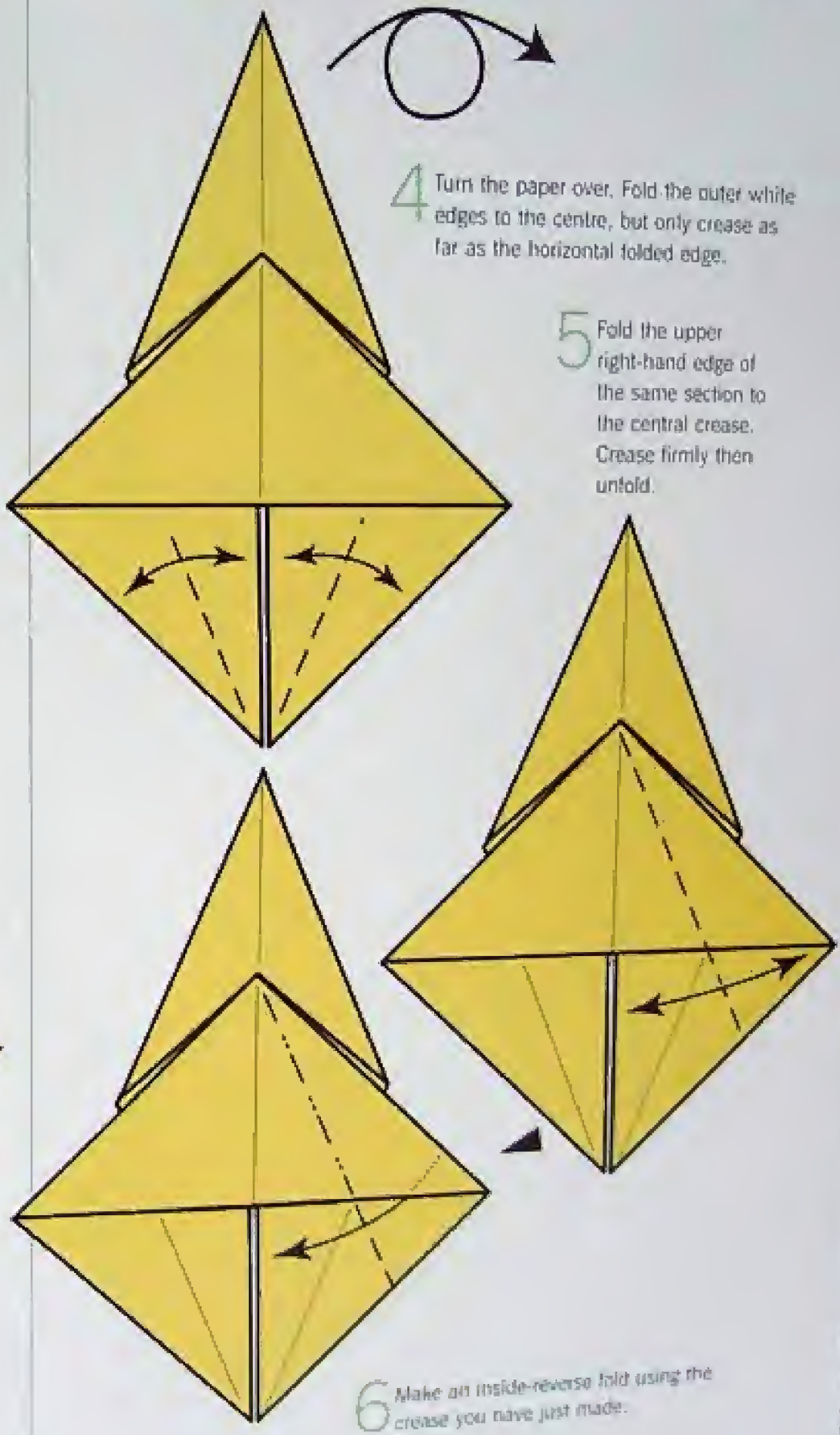
1 Start with an unfolded preliminary base. Fold the lower corner to the centre



2 Now refold the preliminary base.



3 Make a petal fold on the upper layer. (See bird base reminder panel, left.)

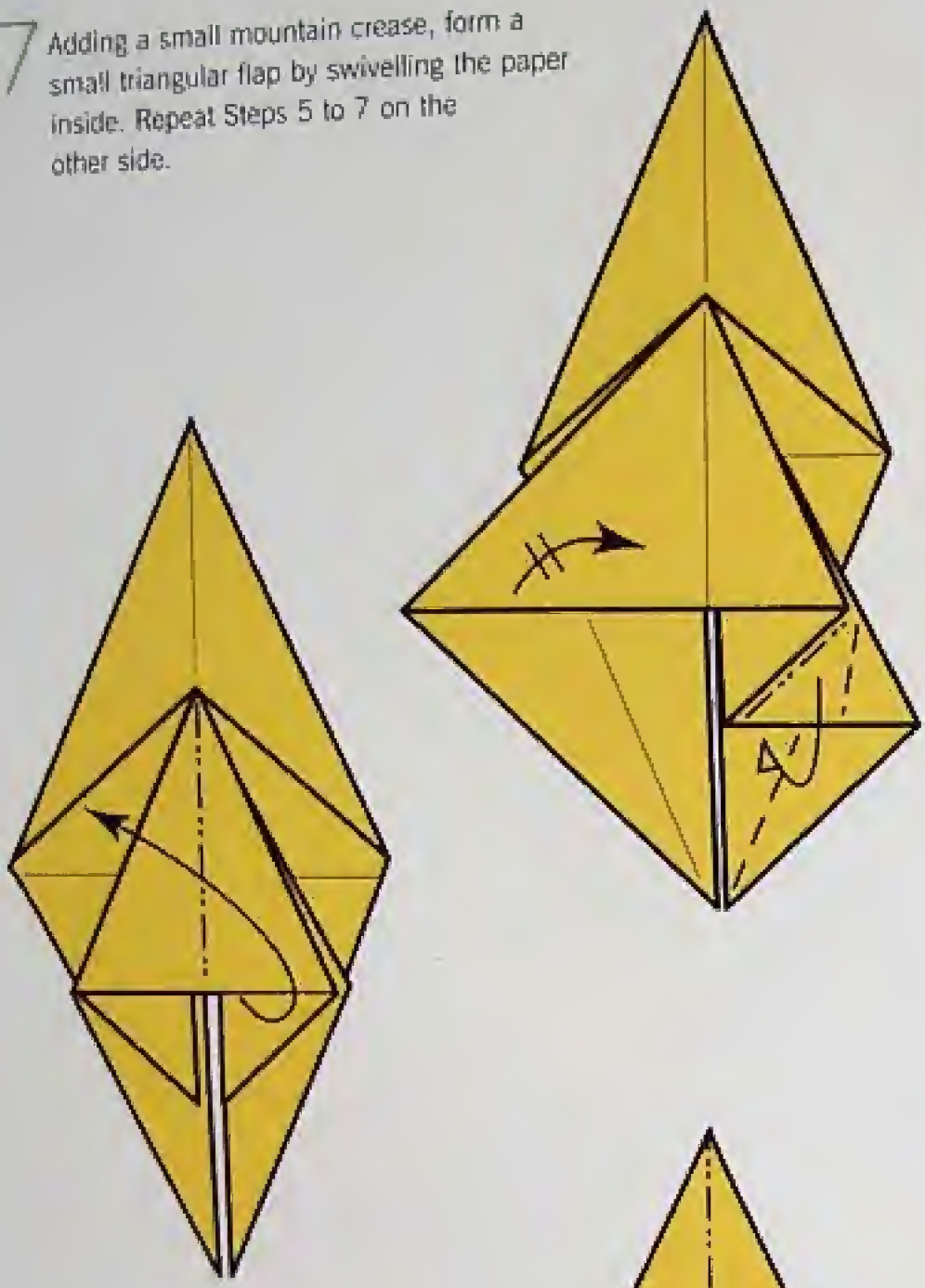


4 Turn the paper over. Fold the outer white edges to the centre, but only crease as far as the horizontal folded edge.

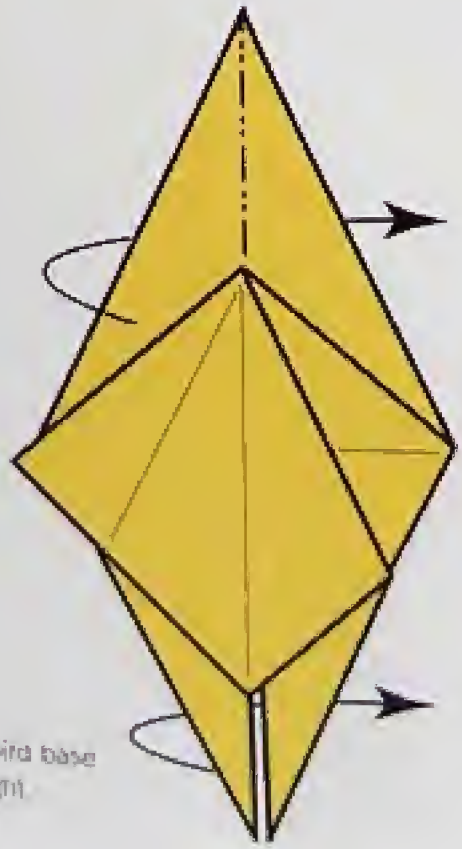
5 Fold the upper right-hand edge of the same section to the central crease. Crease firmly then unfold.

6 Make an inside-reverse fold using the crease you have just made.

7 Adding a small mountain crease, form a small triangular flap by swivelling the paper inside. Repeat Steps 5 to 7 on the other side.

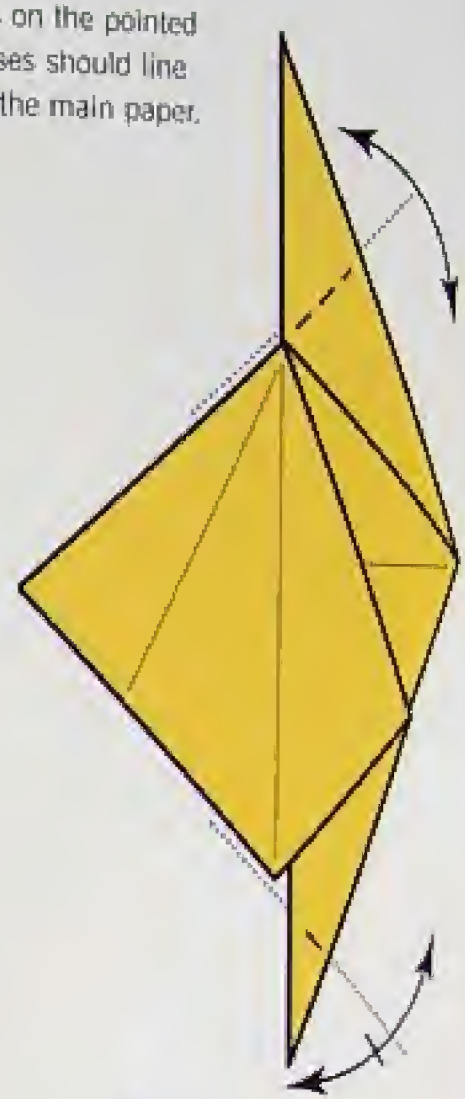


8 Lift up the central lower flap and open it to the left.

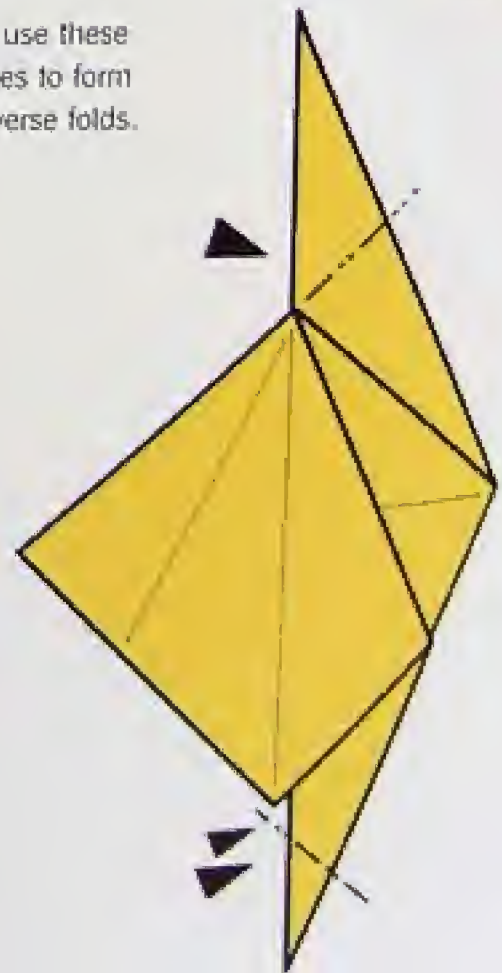


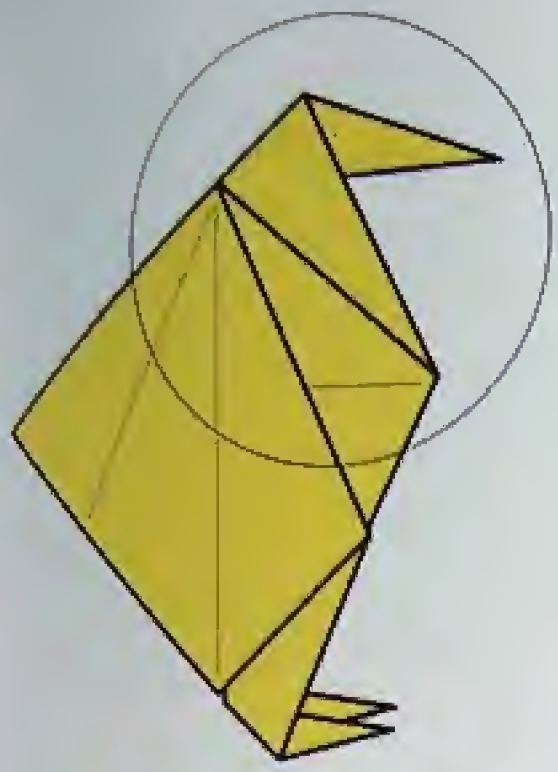
9 Swing the left-hand side of the bird base underneath and across to the right.

10 Make pre-creases on the pointed flaps. These creases should line up with the edges of the main paper.



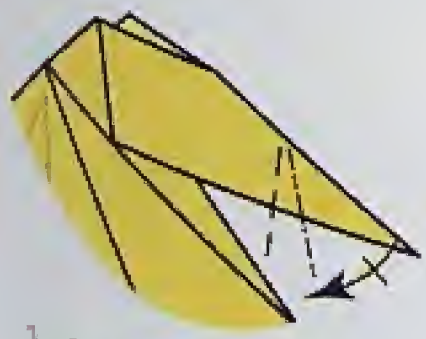
11 Now use these creases to form inside-reverse folds.





12 Most of the bird is now complete, but you need to refine the head.

13 Pre-crease and make an outside-reverse fold on the head. The paper at the top of the head forms a small pocket.

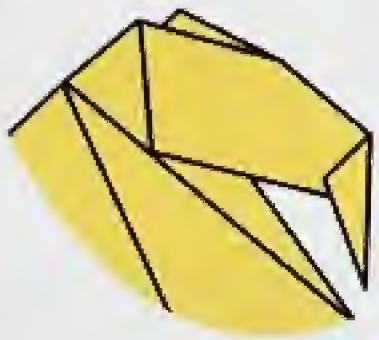


14 Crimp the end of the beak.

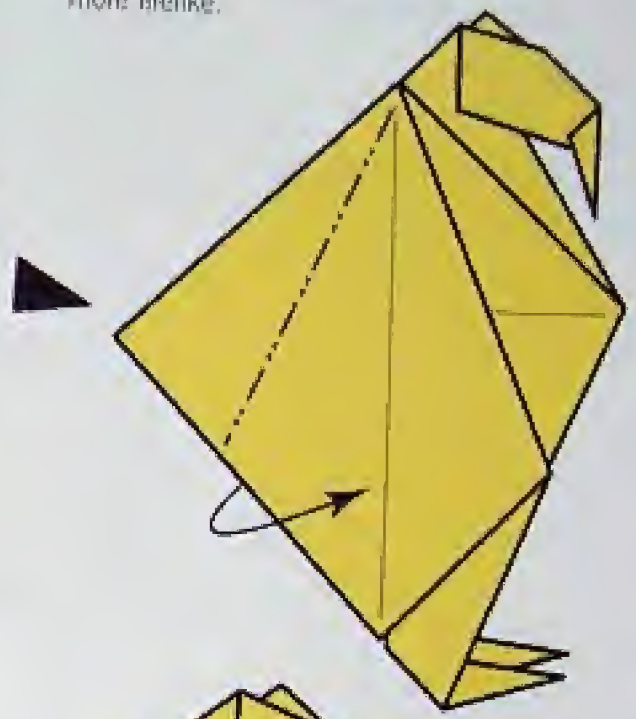
FOLDER'S TIP

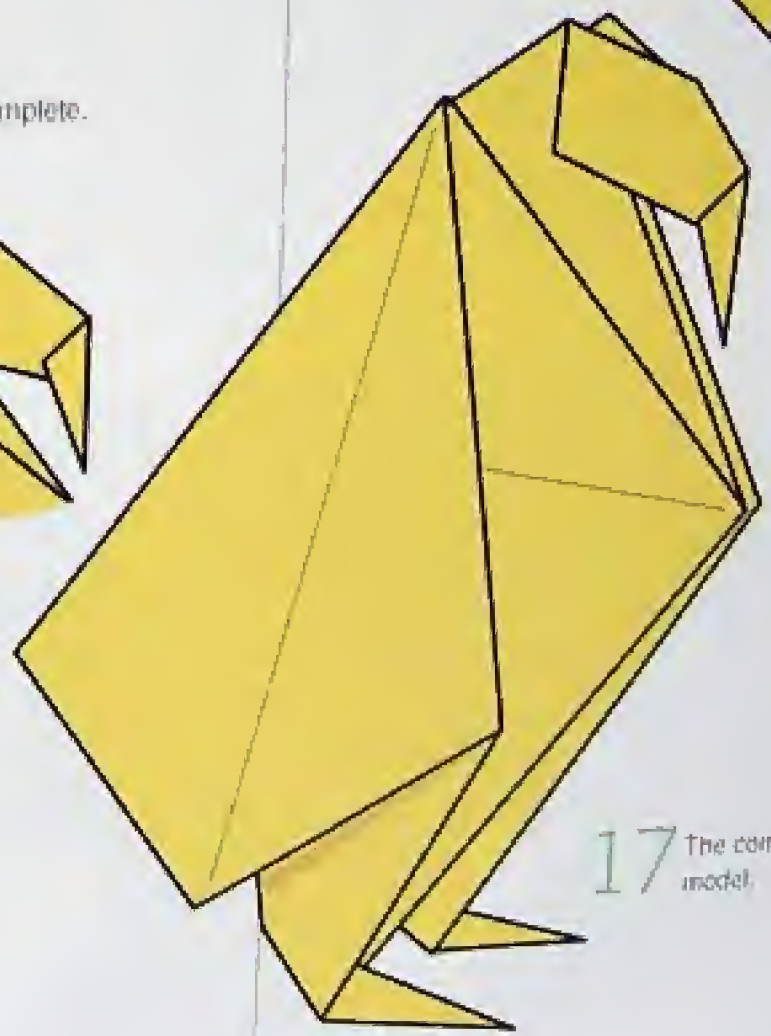
You may need to adjust the angle of the feet slightly if the bird isn't stable. The creases forming the head can be altered to create other types of bird, such as a chicken.

15 The head is now complete.



16 Open the sides of the wings slightly, flattening a triangular section at the back. This makes the bird three-dimensional and more lifelike.





17 The completed model.

ALSO SEE

Reverse folding **page 18**
Crimp **page 22**
Petal **page 23**
Preliminary base **page 28**

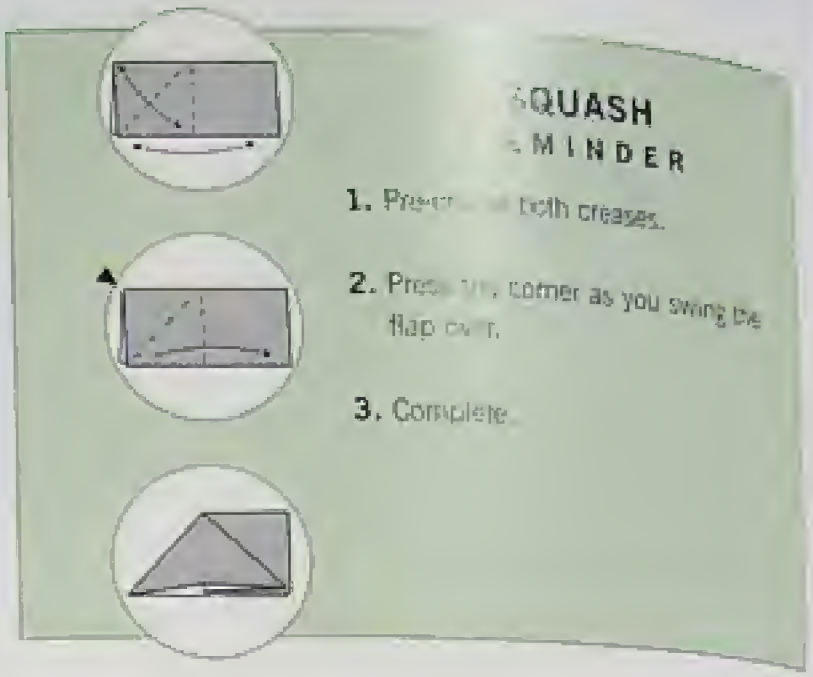
SQUARE BEAR

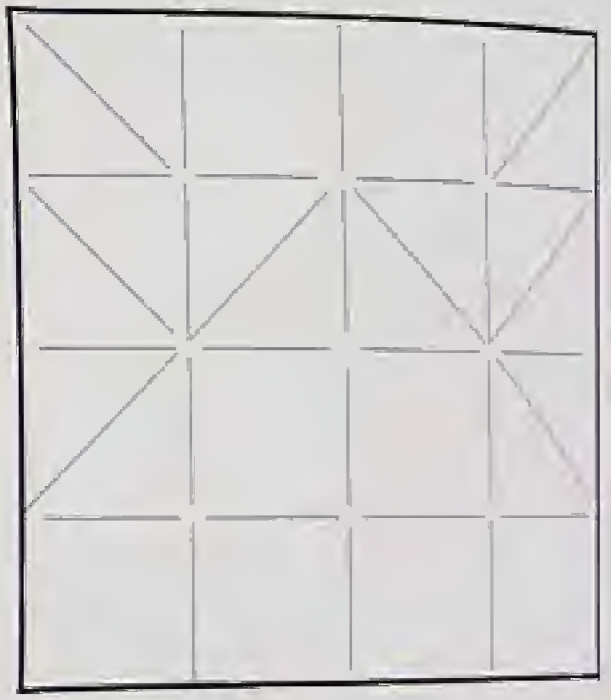
Design by Edwin Corrie

19 STEPS

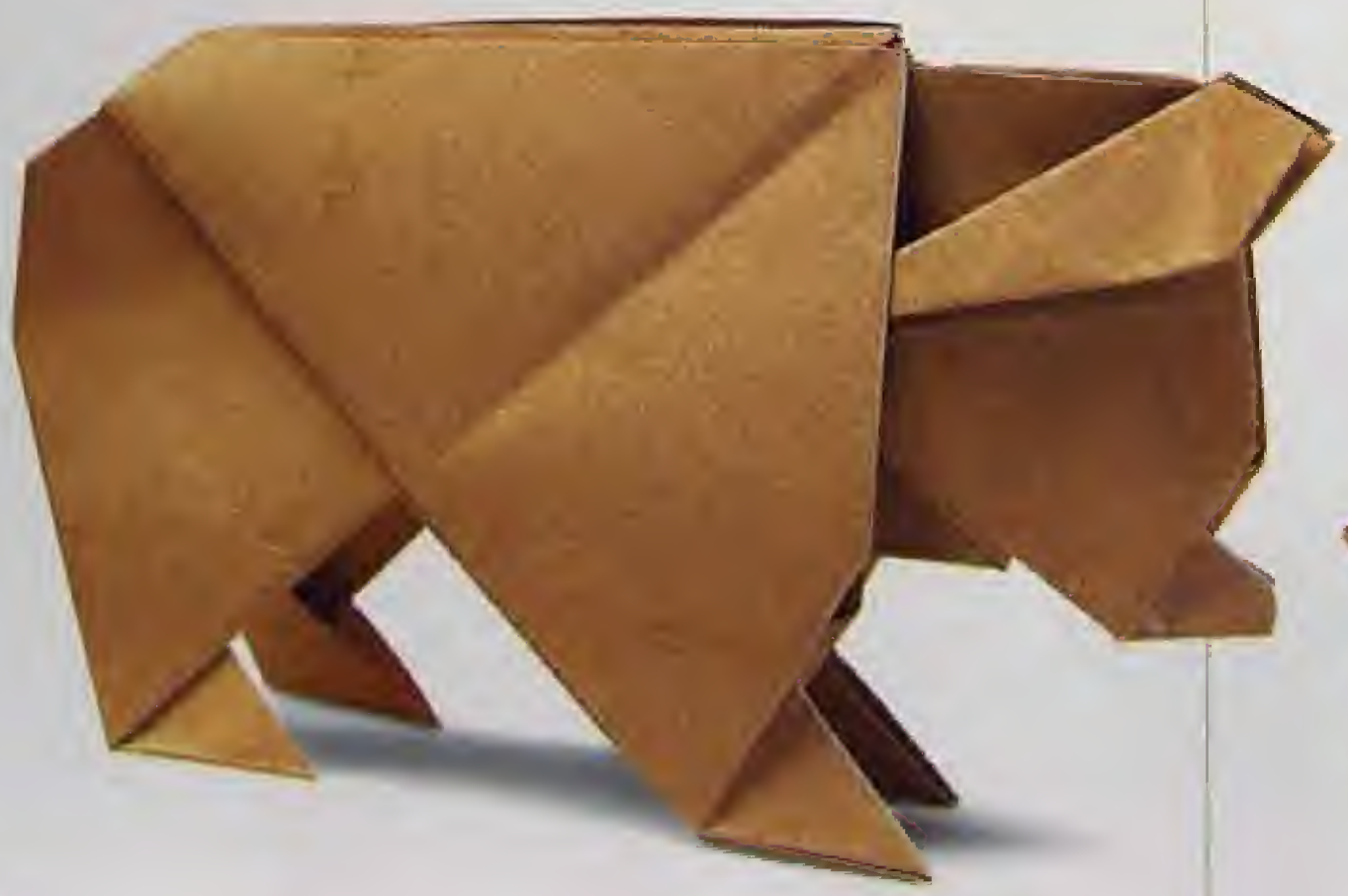
Paper size:
30.5 cm (12 in.) square
Finished bear:
13 cm (5 in.) high

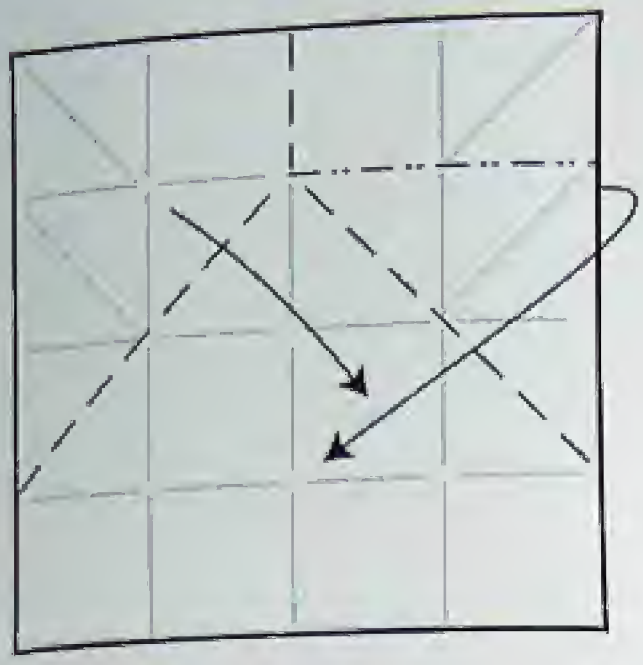
The work of a truly creative origami designer has a distinct character. In other words, you can often recognize the designer from the design. Edwin Corrie is such a folder. His models can easily be picked out because they reflect the particular techniques and styles that he enjoys using. While some creators strive for realism, Corrie simplifies the form of the subject and produces a clearly recognizable caricature. Another feature of his work is his development of an efficient folding sequence that produces the same model every time – there is no need to guess angles or distances.





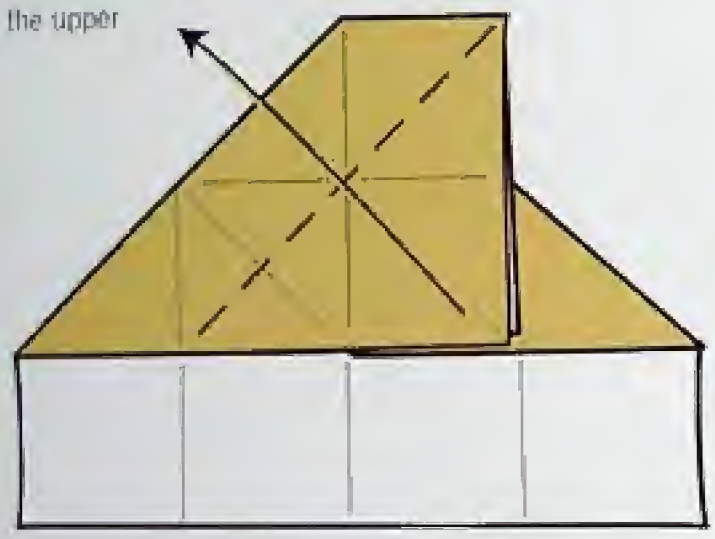
1 Start with a square, divided into quarters both ways. Add the creases shown.

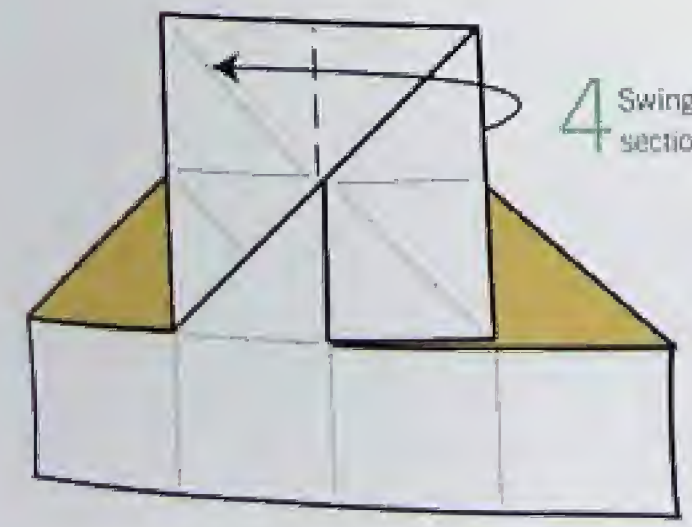




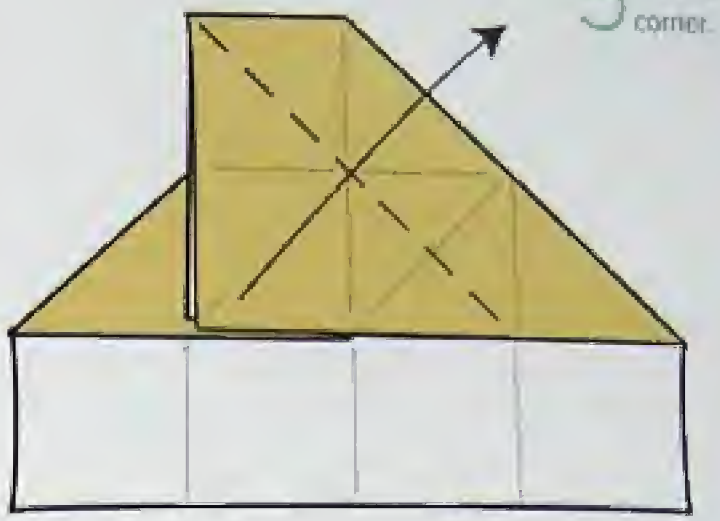
2 Form a rabbit's ear, swinging the flap to the right.

3 Fold over the upper corner.

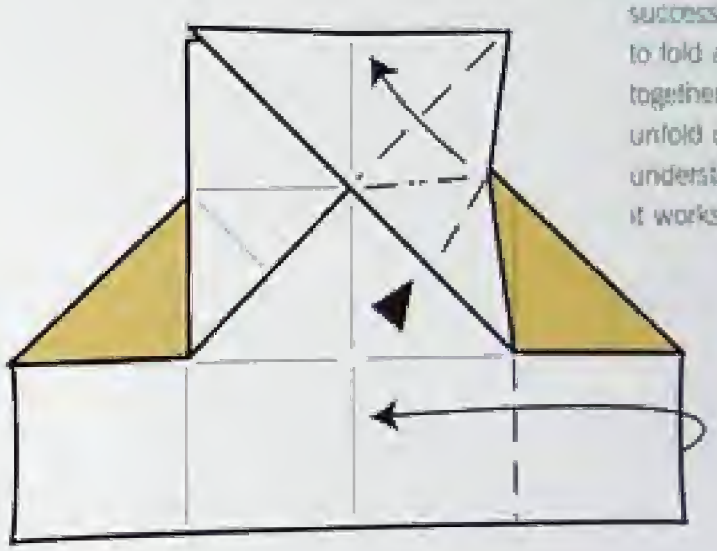




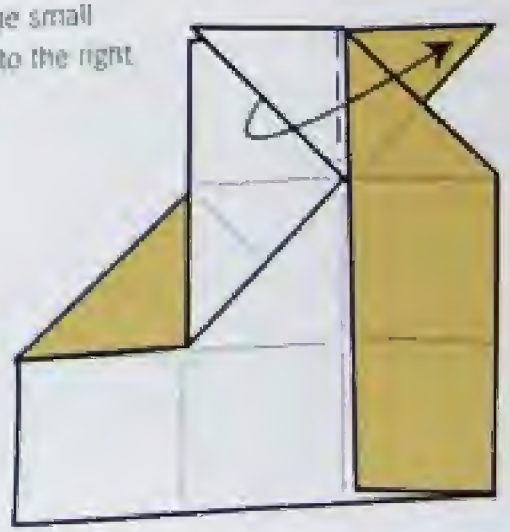
4 Swing the central section to the left.



5 Fold up the matching corner.

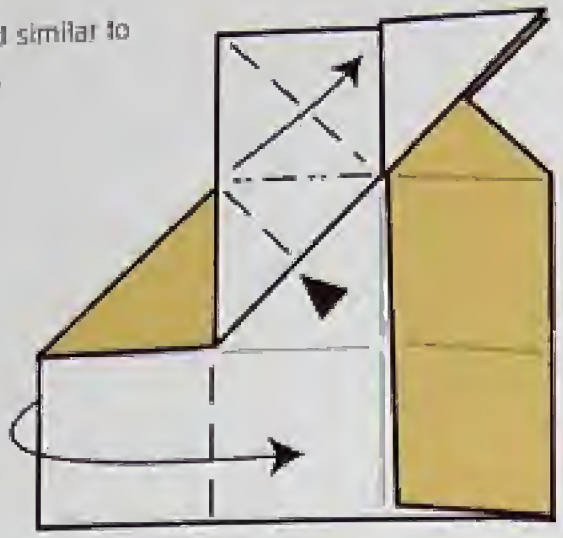


6 Here is a swivel fold. To make the move successfully you need to fold all the creases together. Fold and unfold until you understand how it works.

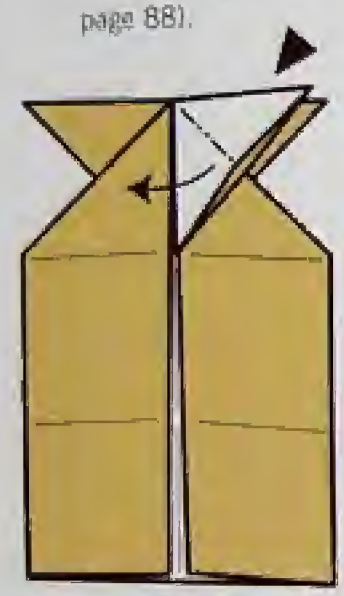


7 Swing the small triangle to the right.

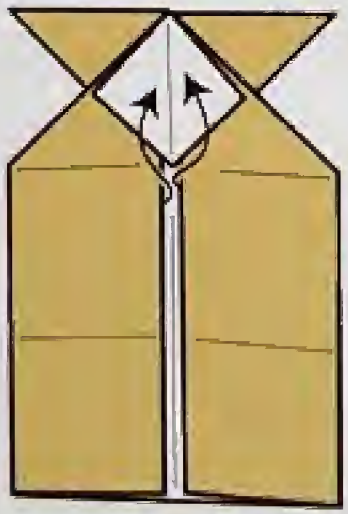
8 Make another swivel fold similar to the one made in Step 6.

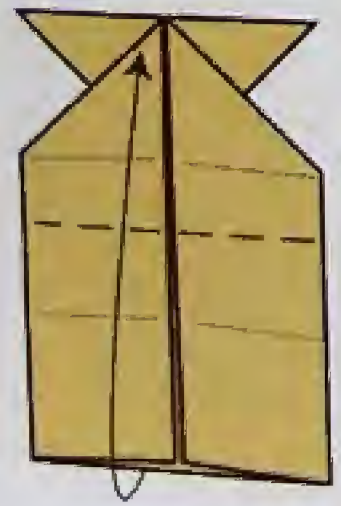


9 Squash the central point (see reminder panel, page 88).



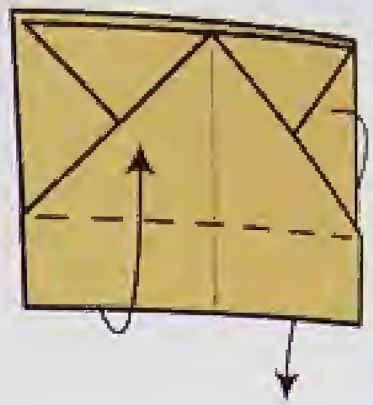
10 Tuck the sides of the squashed flap under the layers on either side.



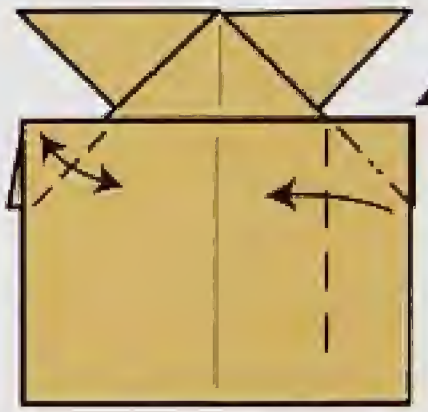


11 Fold the lower edge to the top of the paper.

12 Turn over the paper. Fold up the lower flap between the bottom corners of the triangular section. Allow the paper to swing round from underneath.

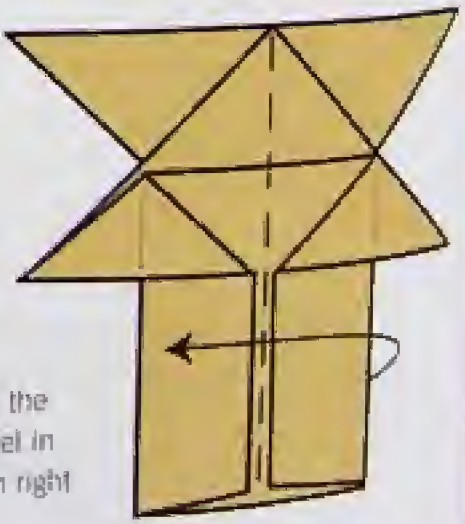


a

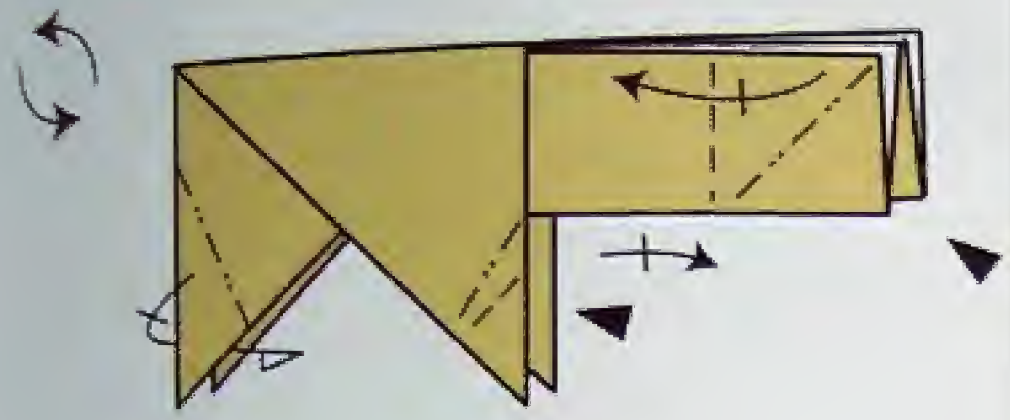


b

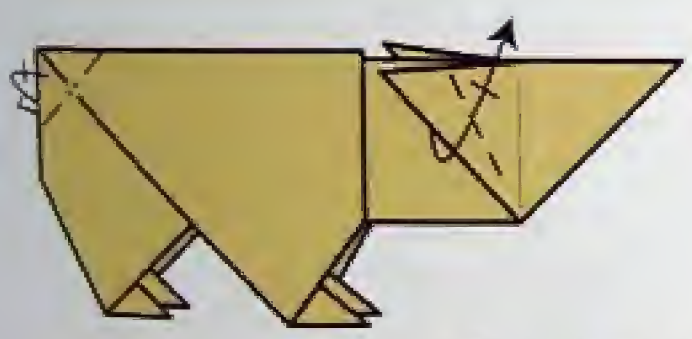
13 Fold over the corners crease and unfold (a). Fold in the side, squash-folding at the top (b).



14 Fold the model in half from right to left.

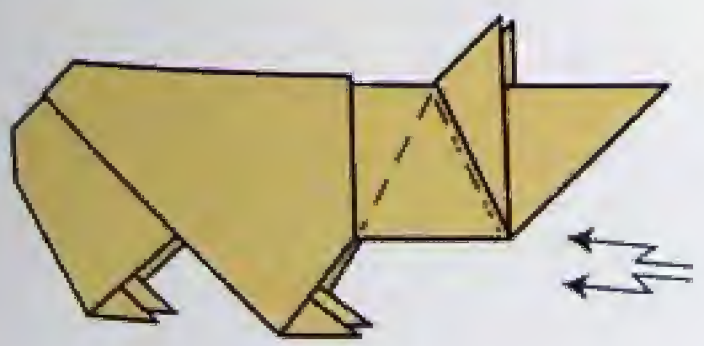


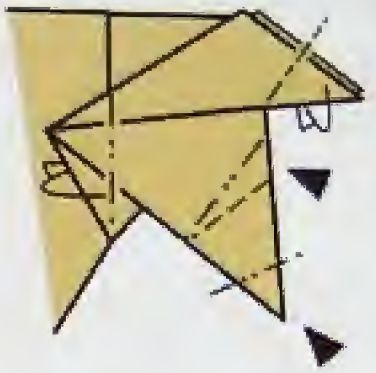
15 Rotate the paper to this position. Several steps are shown in this diagram. Mountain-fold the rear legs. Inside-crimp the front legs. Squash to create the ears. Then repeat all these steps on the other side.



16 Shape the rump and fold the ears up.

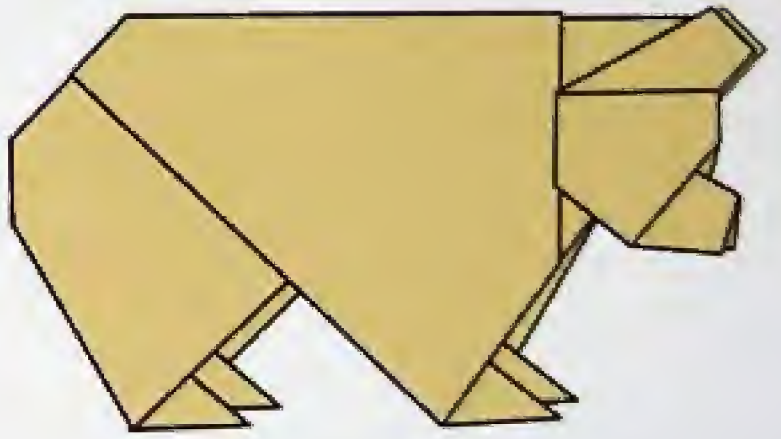
17 Make an outside crimp to form the head.





18 Various shaping folds are made to finish the head (follow the diagram).

19 The completed bear.



FOLDER'S TIP

This fold really requires thin paper because the extra layers in the back cause problems. Paper does have width and you need to take account of it.

ALSO SEE
Crimp page 22

STAR UNIT

Design by Nick Robinson

7 STEPS

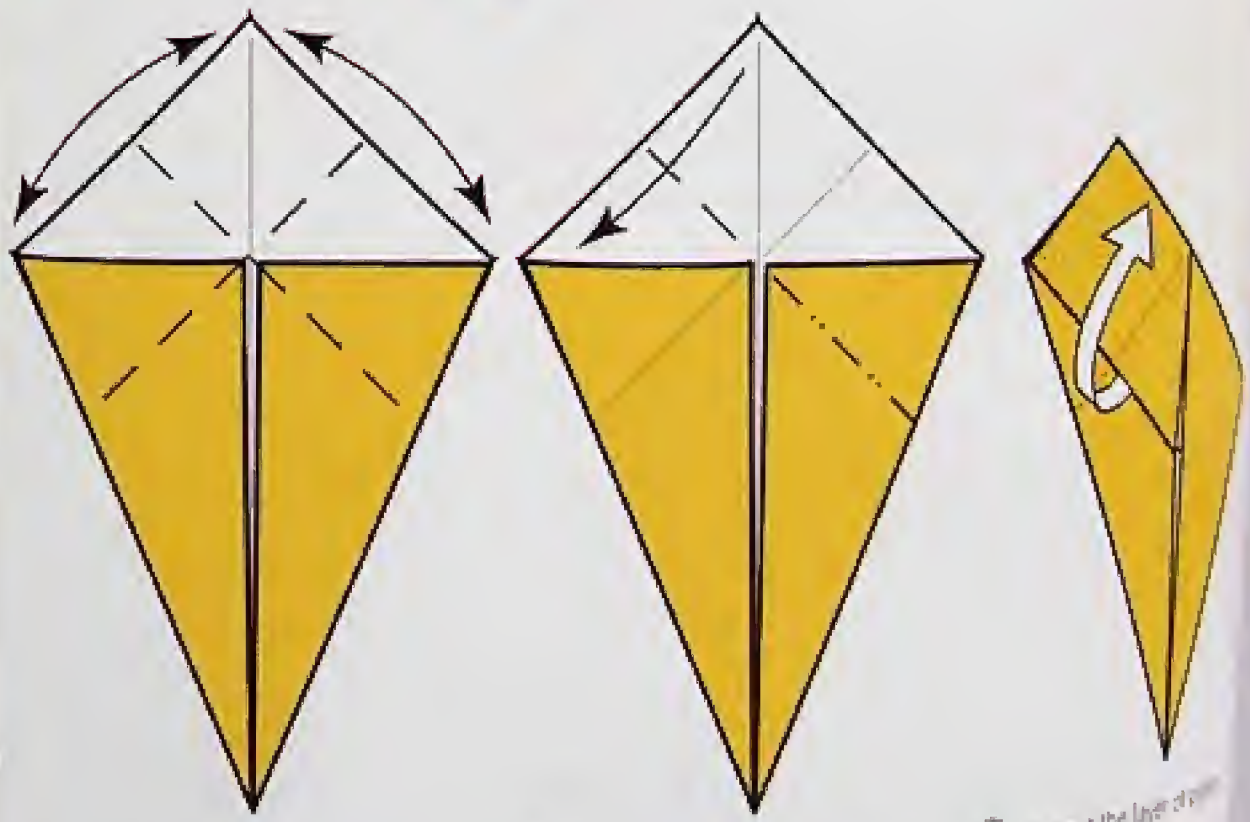
Unlike the ten-point star, this design is three-dimensional and therefore perfect for making decorations. You need at least five star units to make a finished design in three dimensions, but the number of extra units you may use is limited only by the thickness of the paper and your patience. This design was also independently created by Tomoko Fuse of Japan. With such simple designs, duplication is likely to happen. Fortunately, most people in the origami world are happy to share credit when they learn that another folder has been thinking along similar lines.

Paper size:
15 cm (6 in.) square
Finished star:
15 cm (6 in.) high

KITE BASE REMINDER

1. Fold one side to a diagonal.
2. Repeat on the other side.
3. Complete.

ALSO SEE
Reverse folding page 18
Ten-point star page 94

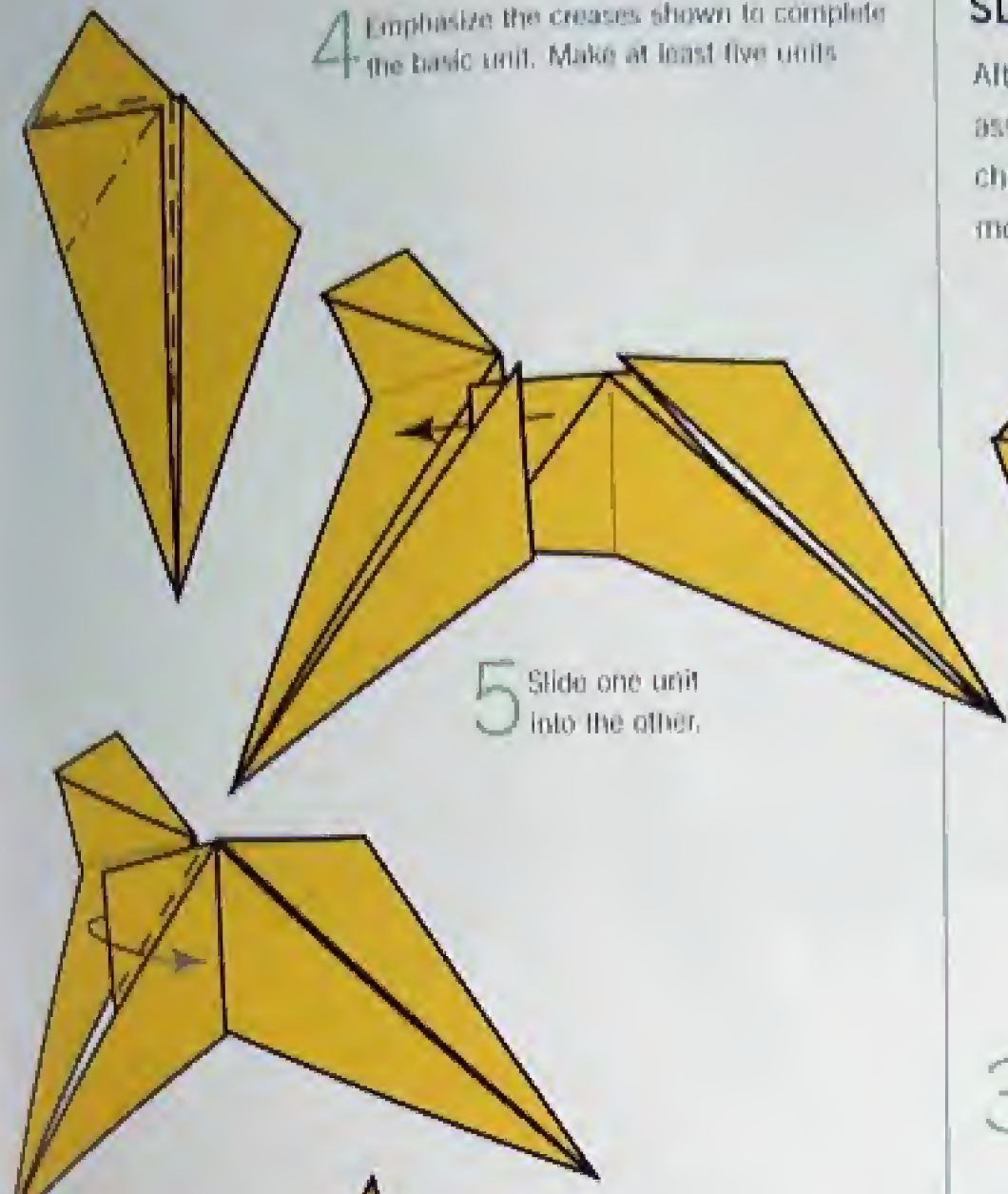


1 Start with a kite base (see reminder panel, above). Fold the top corner to each of the outer corners, crease and unfold.

2 Fold the top corner to the left-hand corner, inside-reverse fold on the right.

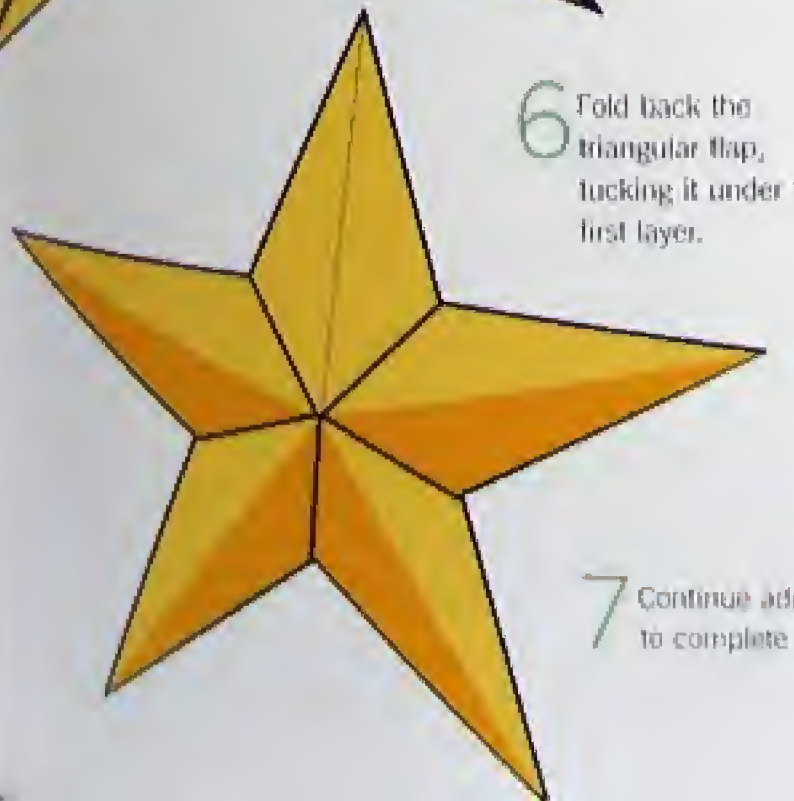
3 Pull out the layer [illegible] from underneath.

4 Emphasize the creases shown to complete the basic unit. Make at least five units



5 Slide one unit into the other.

6 Fold back the triangular flap, tucking it under the first layer.



7 Continue adding units to complete the star.

SLENDER STAR

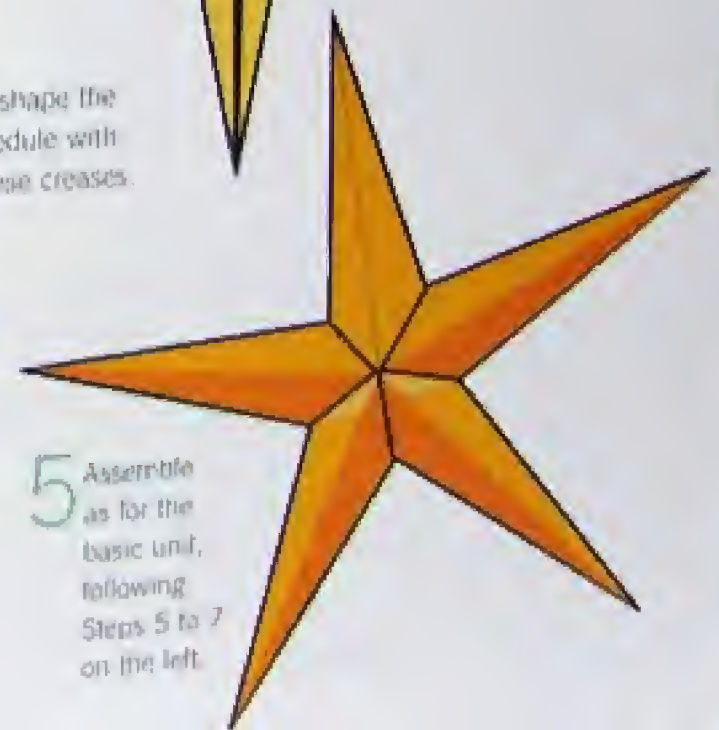
After completing Steps 1 to 4, but before assembling the units in Step 5, you can choose to create narrower units for a more slender star.

1 Fold the short edge at the top to the nearest folded edge. Fold the right-hand section in half.

2 Now fold the left-hand section in half.

3 Fold the tiny flap underneath.

4 Reshape the module with these creases.



5 Assemble as for the basic unit, following Steps 5 to 7 on the left.

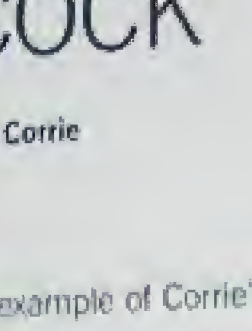
PEACOCK

Design by Edwin Corrie

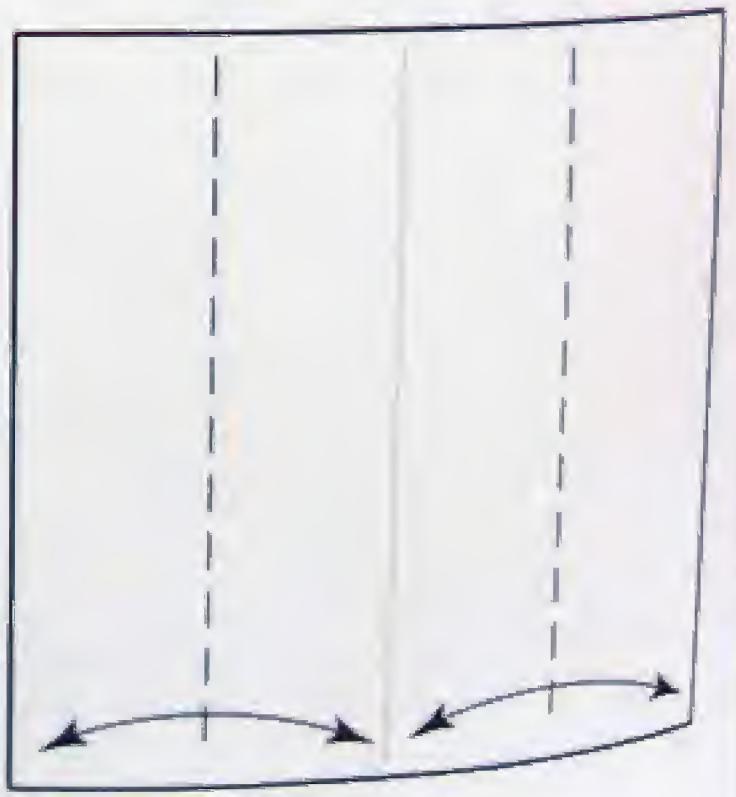
14 STEPS

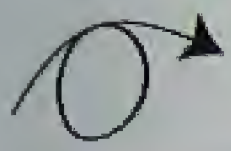
This is another example of Corrie's work. To the front of a fairly well-known peacock (the head and legs are taken from a rectangle-based peacock by Adolfo Cerceda) he adds a radically new and elegant tail. You may find it interesting to compare this design with his square bear (page 88) and see if you can find any stylistic similarities.

Paper size:
20 cm (8 in.) square
Finished peacock:
15 cm (6 in.) high

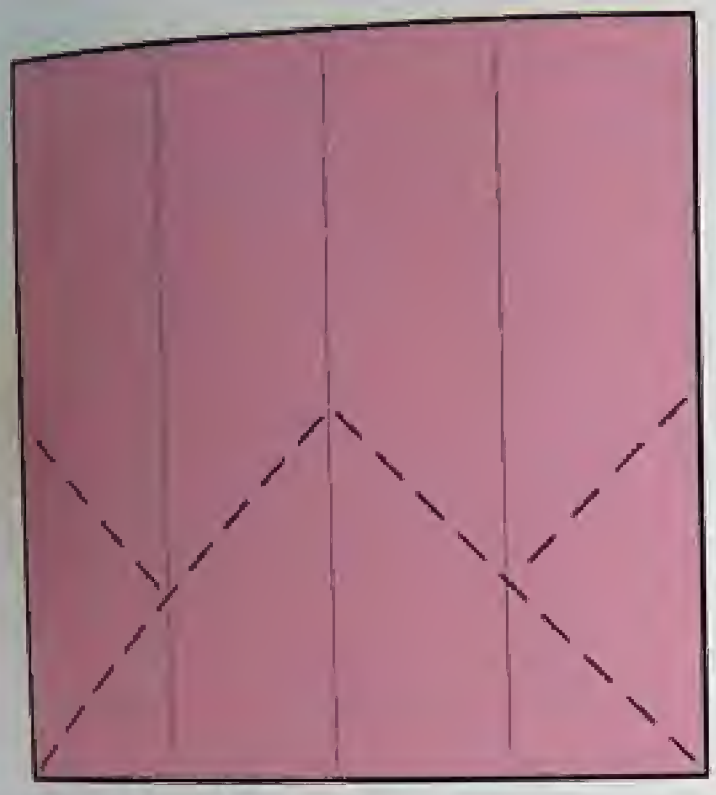


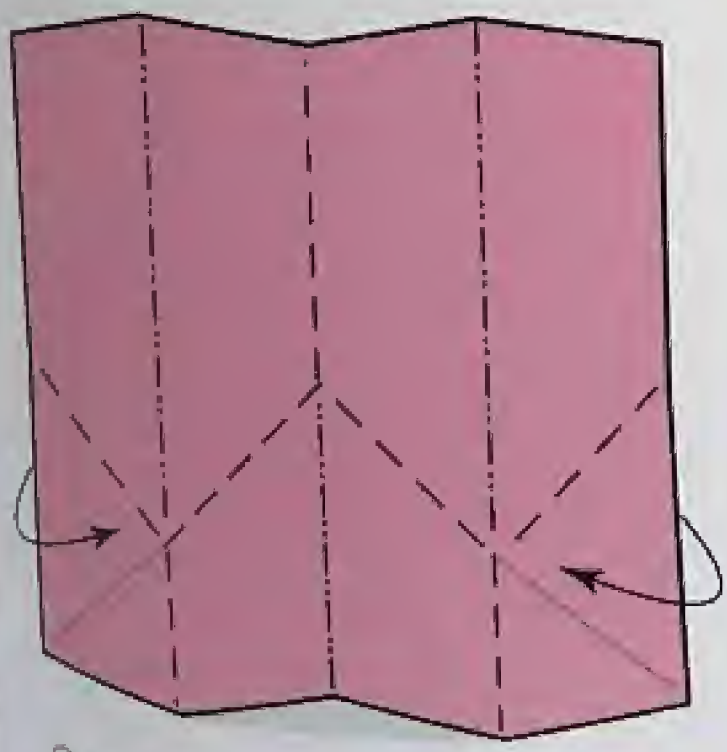
1 Start with a square, white side upwards, that has been creased in half. Add two quarter creases.



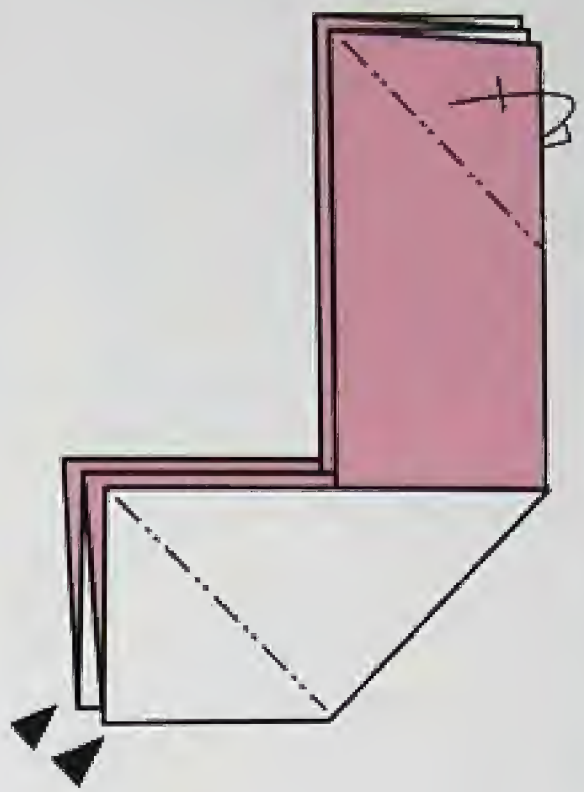


2 Add valley creases where shown.

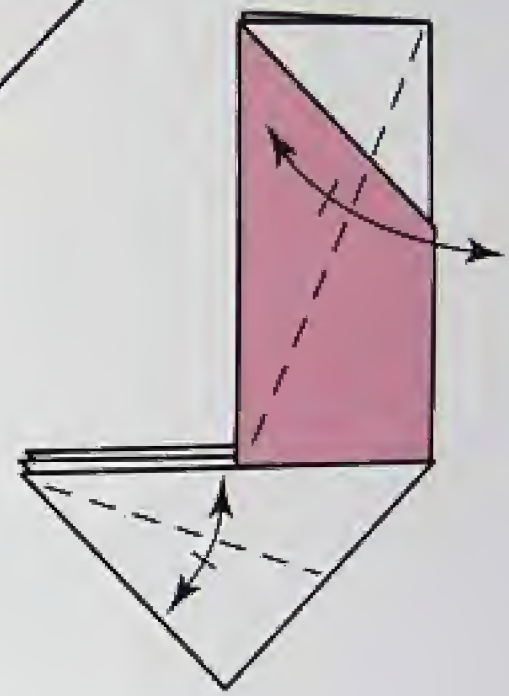




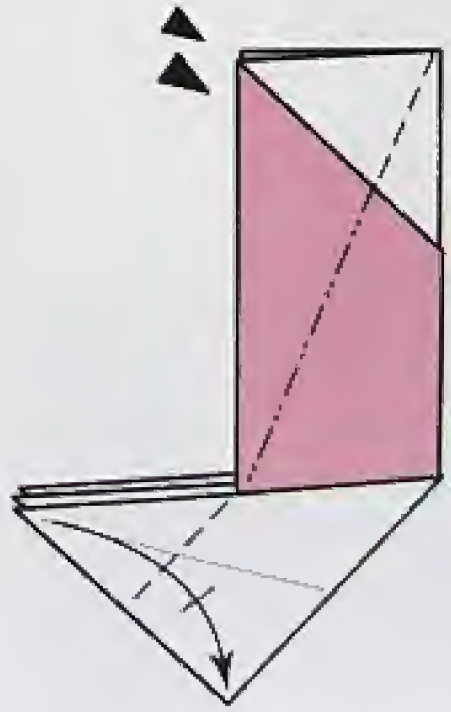
3 Follow the crease pattern carefully to produce a series of reverse folds. Check the next diagram as a guide.



4 Inside-reverse both lower left corners. Mountain-fold both outside (original) corners behind.

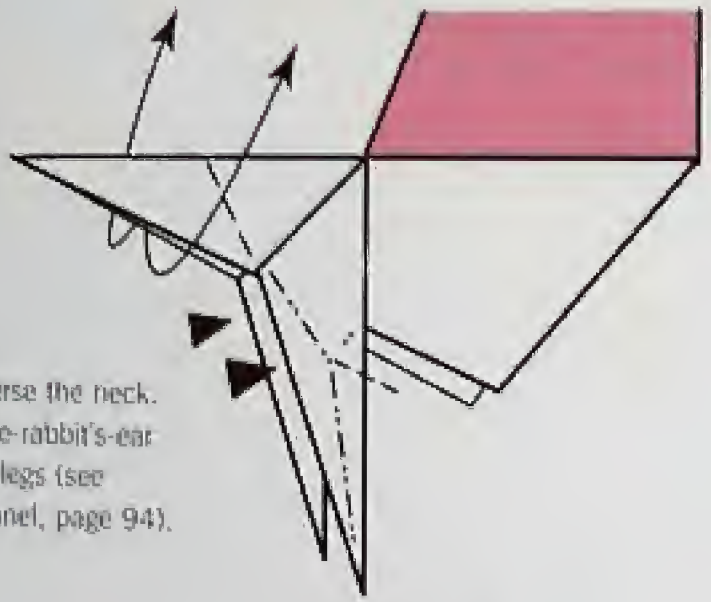


5 Make two pre-creases and repeat them underneath.

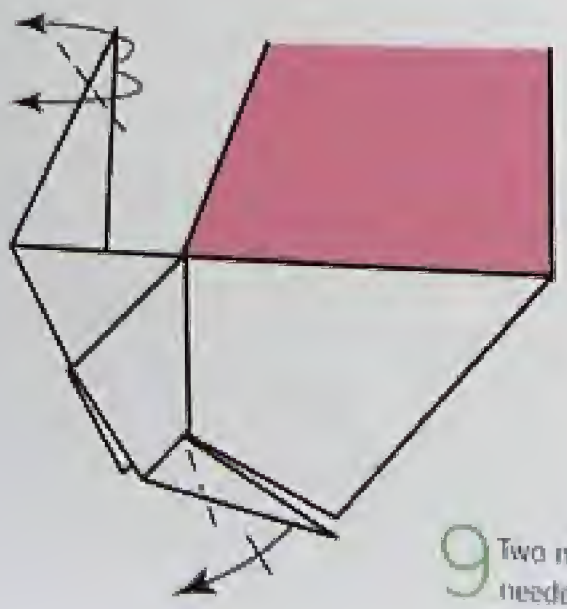


6 Fold the lower left corners down and inside-reverse the upper corners.

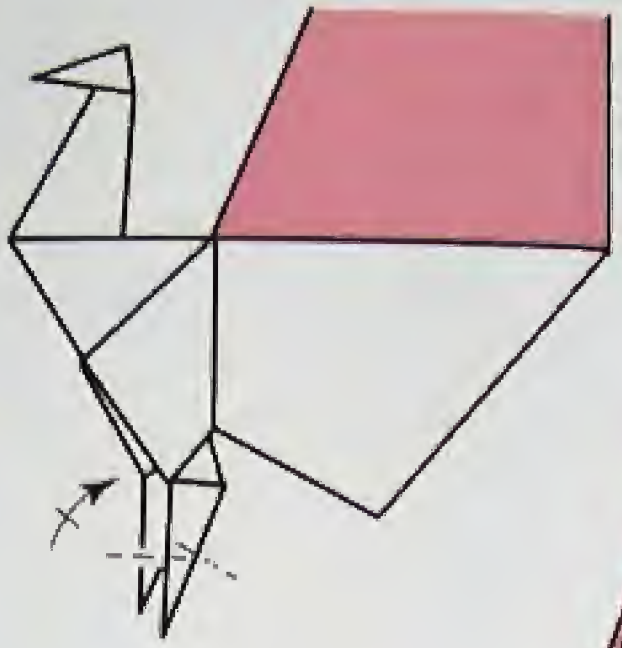
7 Make a mountain fold from the left-front corner all the way back, folding the body in half within. To complete the move you also need to fold the leg in half. Repeat this step on the other side.



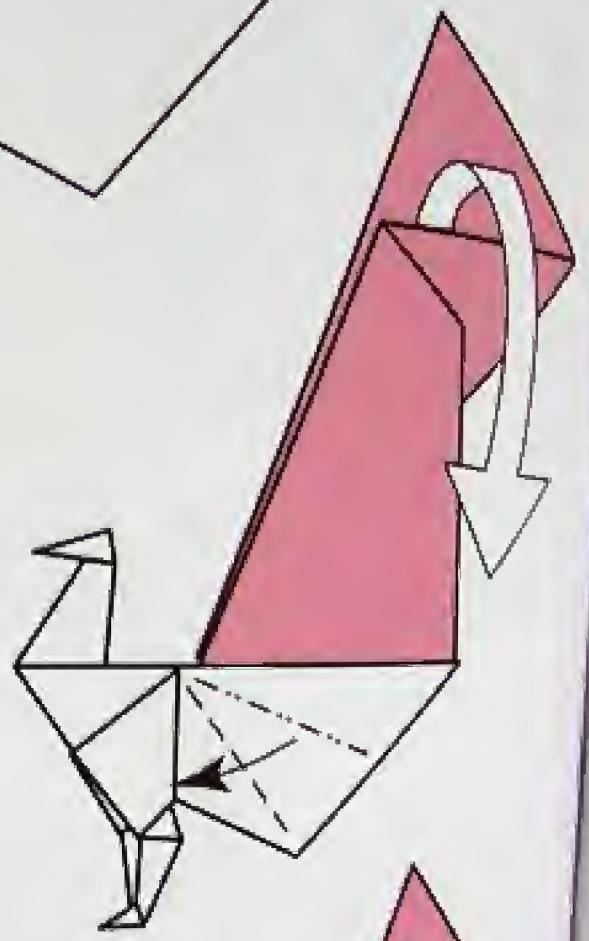
8 Outside-reverse the neck. Make double-rabbit's-ear folds to the legs (see reminder panel, page 94).



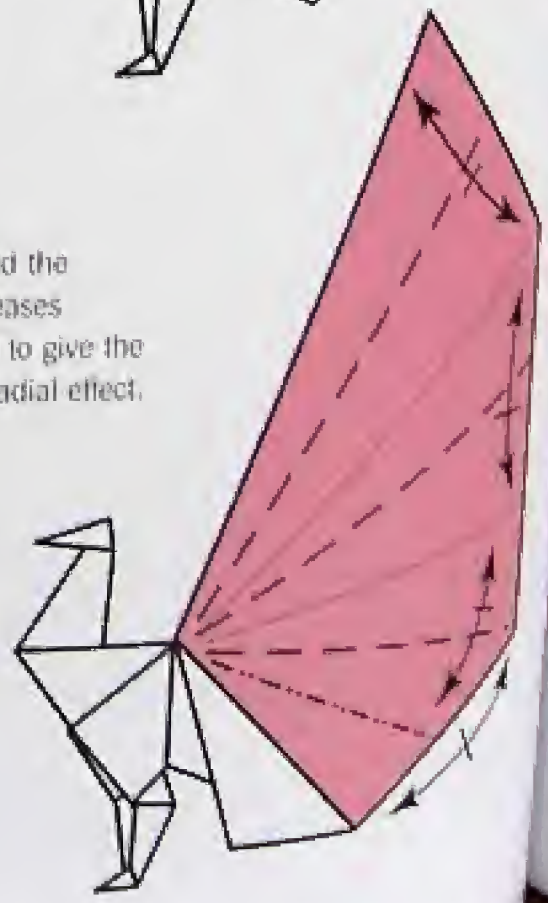
9 Two more reverse folds are needed to form the head and legs.



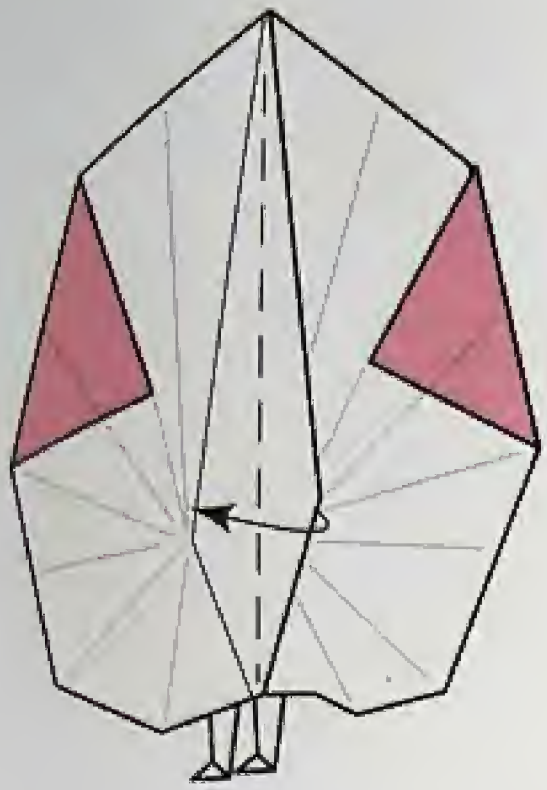
10 Make inside crimps to form the feet.



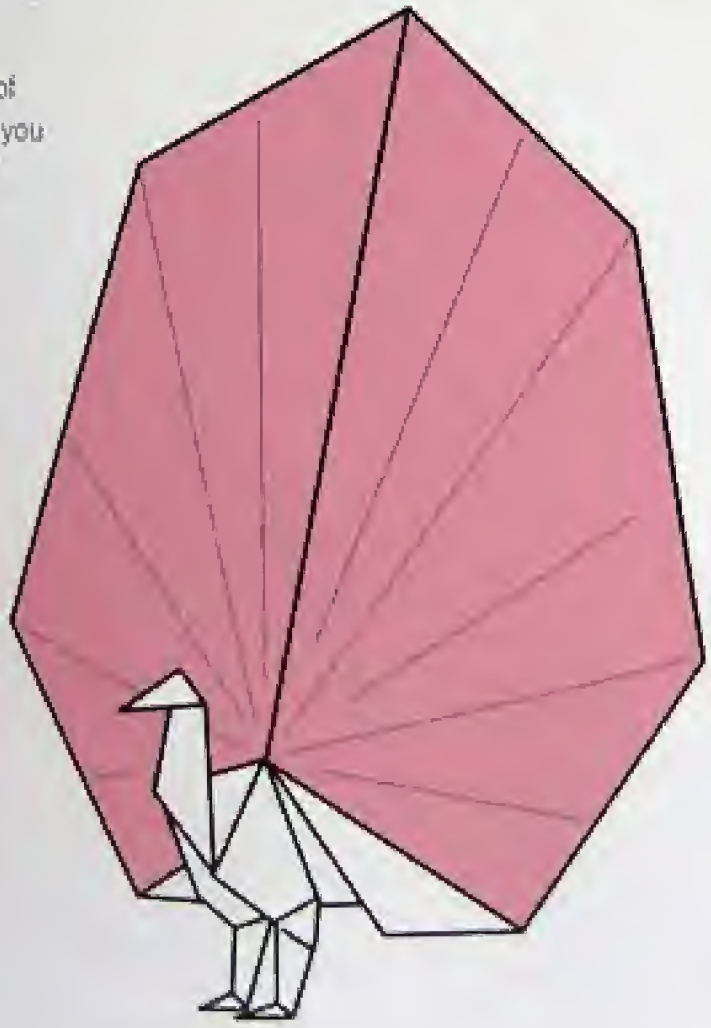
11 Make a crimp on the body and spread the tail out. It should lie flat. Repeat behind.



12 Add the creases shown to give the tail a radial effect.



13 From behind the tail, make a valley fold to lock the tail together.



14 With a bit of balancing, you might even get your peacock to stand!

CHALLENGE

Find two sheets of thin paper, one a suitable body colour, the other a bright tail pattern. Glue the two sheets together with spray-mount adhesive and fold the perfect peacock!

ALSO SEE
Reverse folding page 18
Crimp page 22

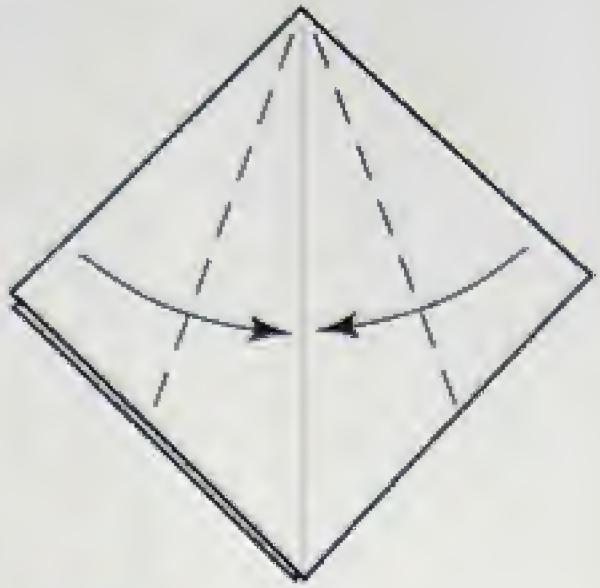
SPINNING SYMMETRY

Design by Brian Cole

12 STEPS

This design is an exercise in accurate folding and produces a neat octagonal result. Cole, although an accomplished folder, was not usually creative. He was just playing about with creases when he stumbled upon this design. Sometimes, creativity needs only a flash of insight.

Paper size:
20 cm (8 in.) square
Finished model:
10 cm (4 in.) wide



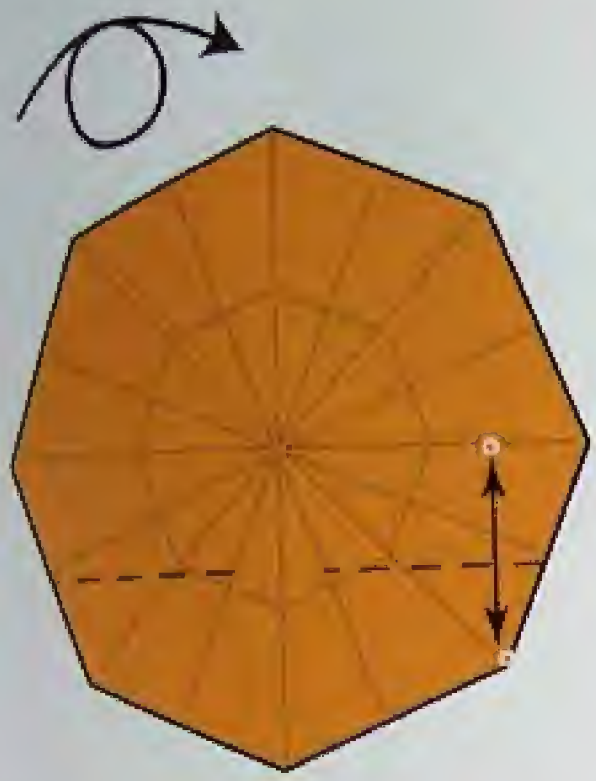
1 Start with a preliminary base, white side outwards. Fold both upper edges to the vertical crease.

2 Fold the lower triangular flap upwards. Repeat on the other three possible places.

3 Open out back to the square.

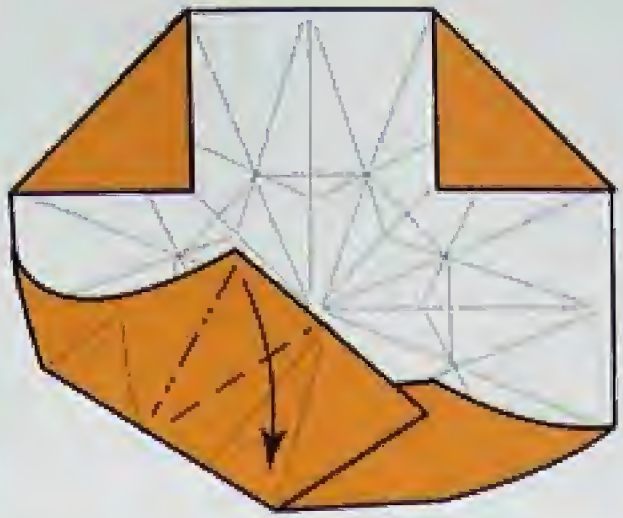
4 Fold the corners in on existing creases.

5 Fold an edge to the centre. Crease only where shown. Repeat on all eight sides. Turn the paper over.



6 Fold the lower right corner to the horizontal crease, creasing only where shown. Repeat on all eight sides.

7 Turn over again and form a kind of rabbit's ear. As you do so, the paper will become three-dimensional.

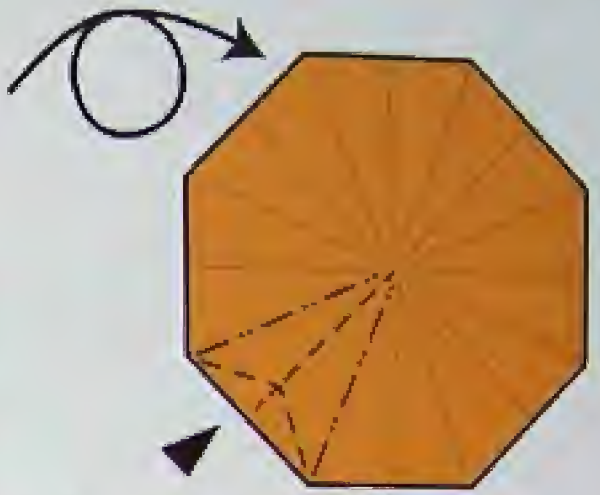


8 Here is one corner complete. Rotate the paper anticlockwise, repeating the move on all eight sides.

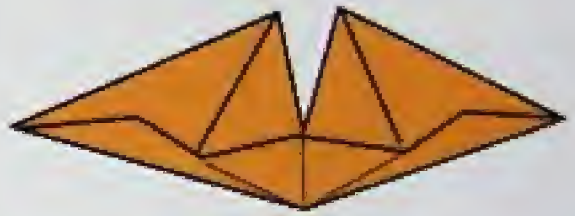
9 The last fold requires you to open the first one slightly. This will be the result.

CHALLENGE

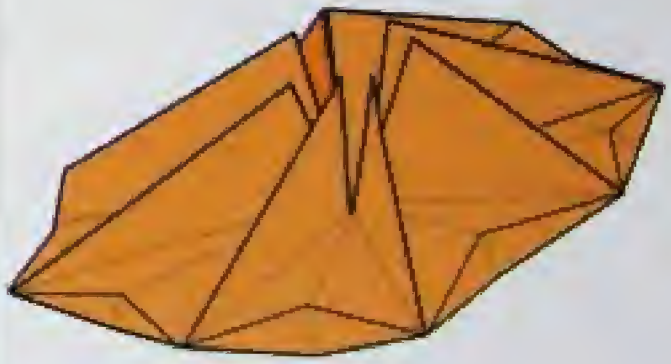
Just for fun, make a mirror image of this design, folding the paper clockwise at Step 7. Also try making a fine model and spinning it in the palm of your hand.



10 Turn over the paper and reinforce these creases. From this side, the centre of the paper is the high point of a gentle cone shape.



11 Turn over again. The paper should resemble an old-fashioned spinning top, with flaps that rotate anticlockwise, overlapping each other. This is a side view.



12 The completed model

ALSO SEE
Rabbit's ear page 20
Policeman's hat page 78

JET PLANE

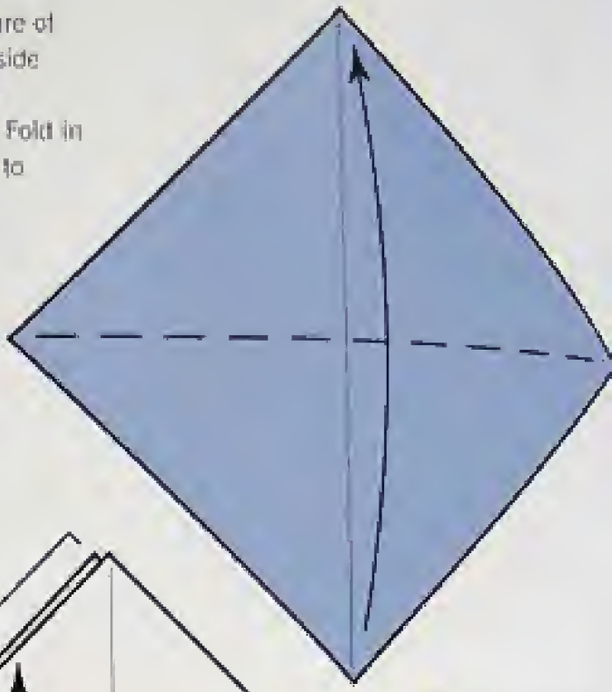
Design by Nick Robinson

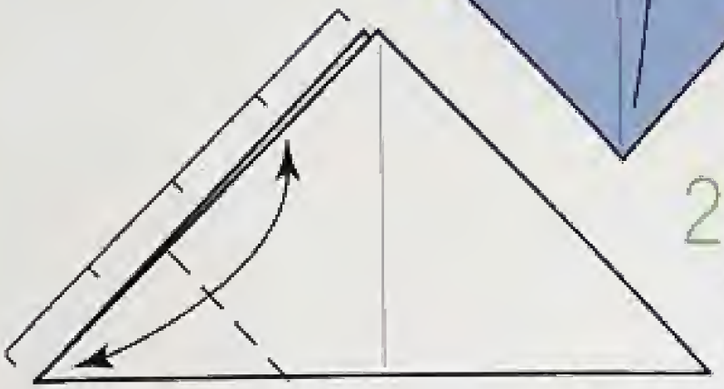
11 STEPS

Here is a simple jet plane, of the non-flying variety. Due to the way in which paper planes are built (with the majority of the paper at the front end), it isn't possible to make a flying plane with this wing shape.

Paper size:
15 cm (6 in.) square
Finished jet plane:
15 cm (6 in.) long

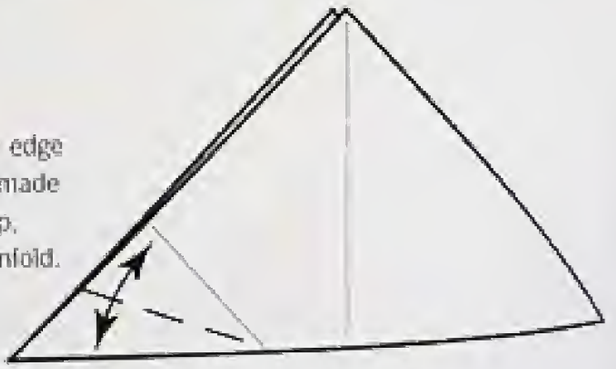
1 Start with a square of paper, coloured side upwards, with a diagonal crease. Fold in half from corner to opposite corner.

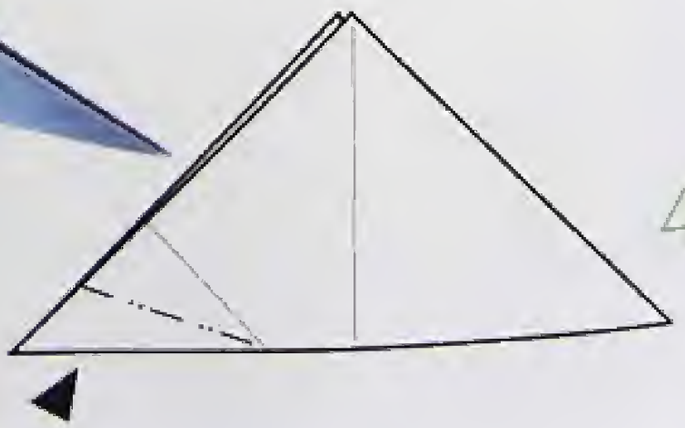




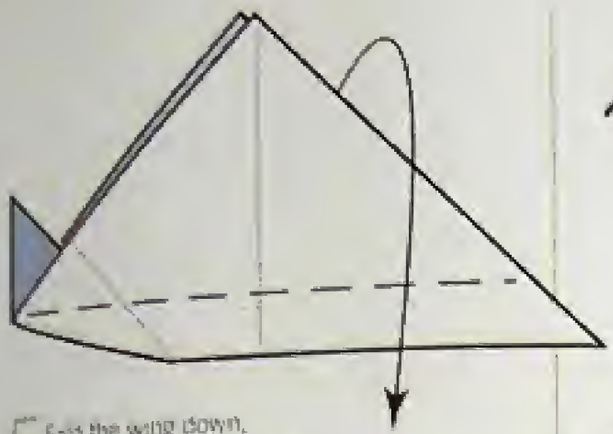
2 Fold the lower left corner to around the three-quarter point of the raw edges.

3 Fold the lower edge to the crease made in the last step, crease, and unfold.

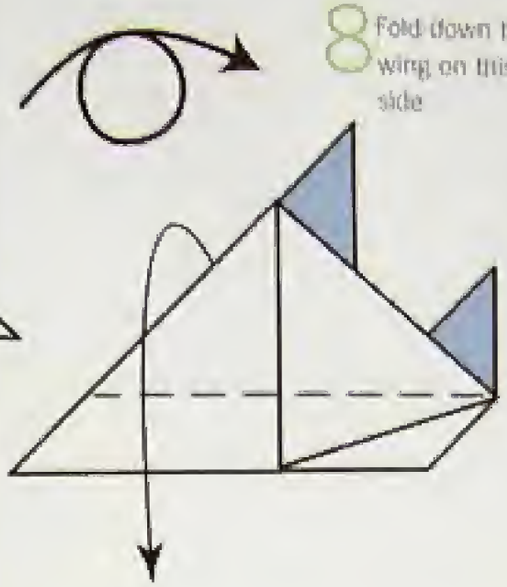




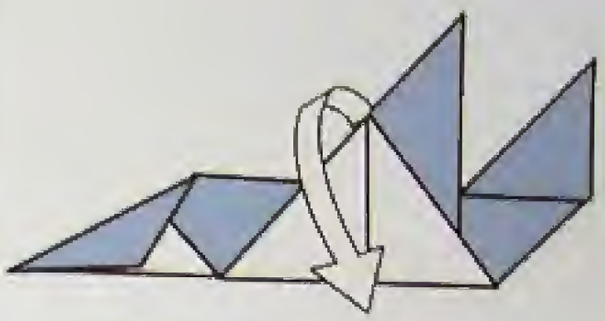
4 Make an inside reverse fold along the most recent crease.



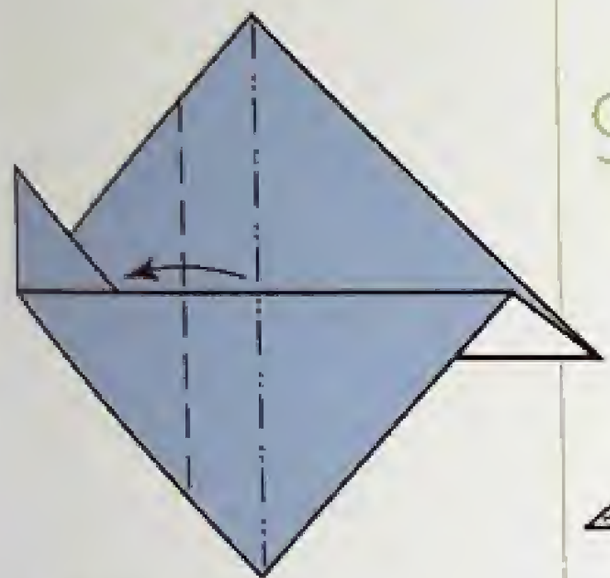
5 Fold the wing down, starting at the lower point of the tail fin.



8 Fold down the wing on this side.

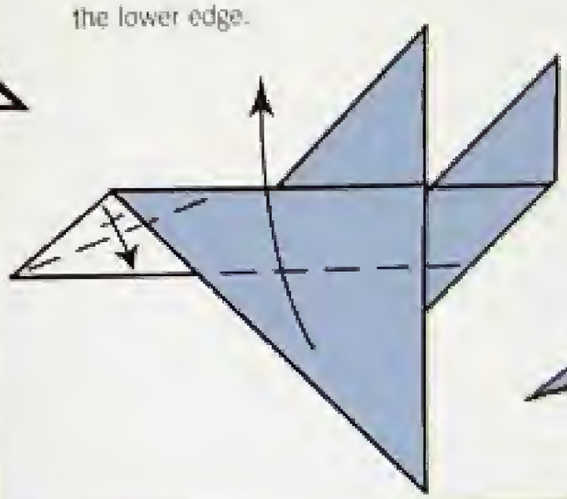


10 Fold both wings down to halfway, then make an inside-reverse fold to the tip of the nose.

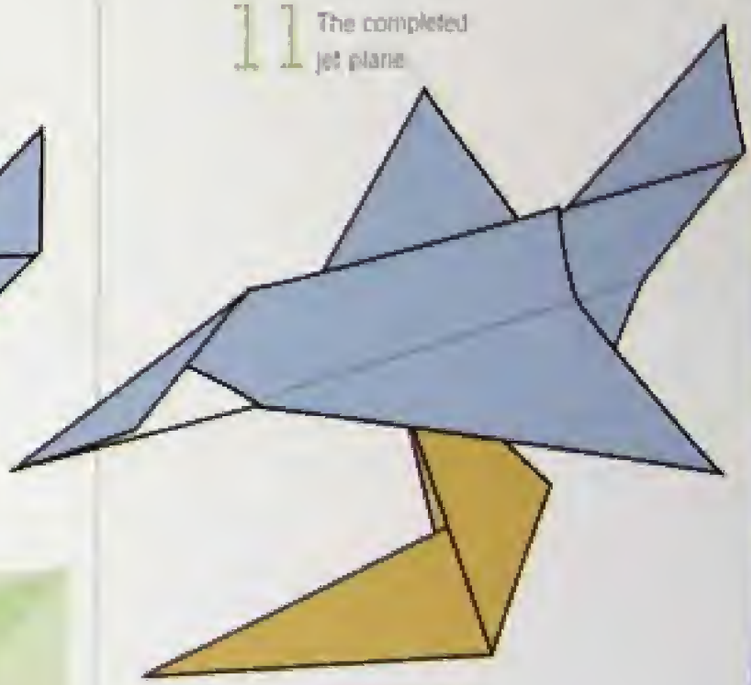


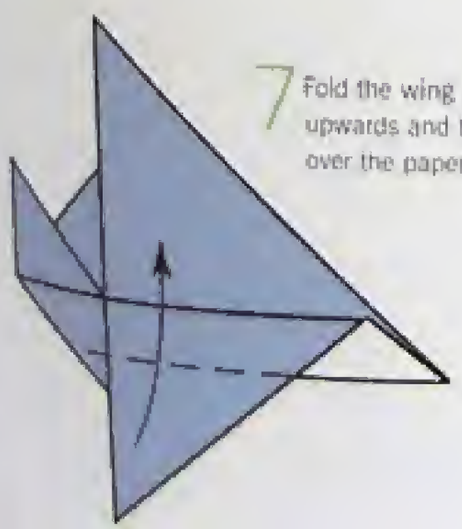
6 Pleat the vertical centre crease to touch the corner of the tail fin.

9 Then fold it back up again. On both sides, fold the angled edge at the nose to meet the lower edge.



11 The completed jet plane.





7 Fold the wing upwards and turn over the paper.

CHALLENGE

Can you create the stand shown by adding a few creases to a fish base? You need to persuade the fish base to become three-dimensional, then make a reverse fold.

ALSO SEE
Fish base page 30
Inside reverse page 18

CHALLENGING PROJECTS

If you have folded all the earlier projects, you should be ready to tackle these more challenging designs. Fold carefully, look ahead to see what you are aiming at, and be prepared not to fold a perfect example straight away. You may not even finish first time around, but come back after a break and you should progress step by step. Try and find someone to fold with – two heads are better than one!

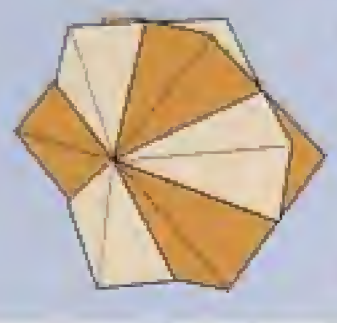
DOUBLE CUBE

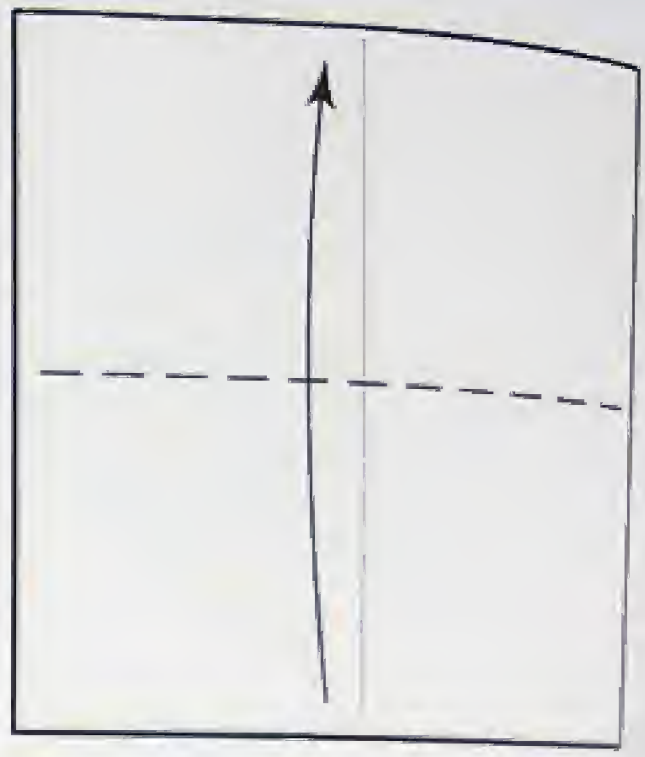
Design by David Brill

17 STEPS

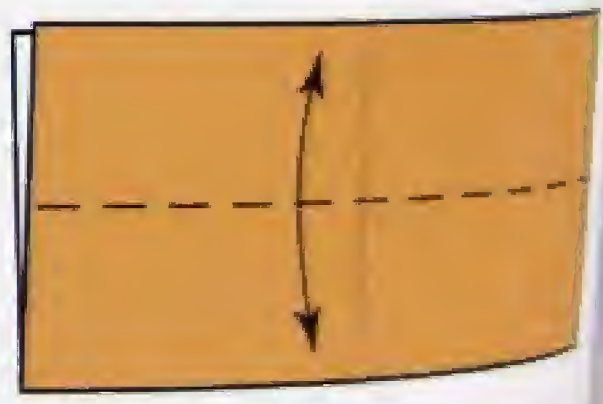
The designer of this wonderful origami illusion is also a highly skilled artist, and this allows him to visualize things from unusual perspectives and then create them with paper. This design was the first in what became a series depicting one cube appearing to rotate through the centre of another. You should use contrasting colours or patterns to accentuate the effect.

Paper size:
25 cm (10 in.) square
Finished cube
Approximately 25 cm (10 in.) high



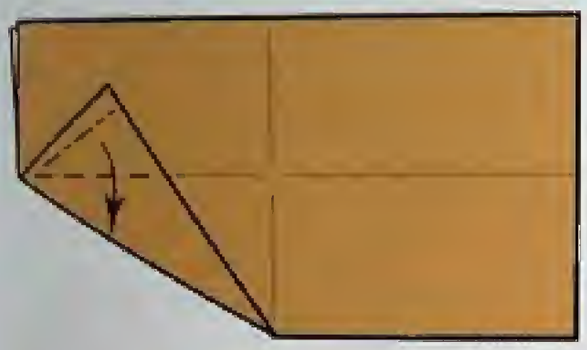


1 Start with a square, white side upwards, creased in half. Fold in half the other way.

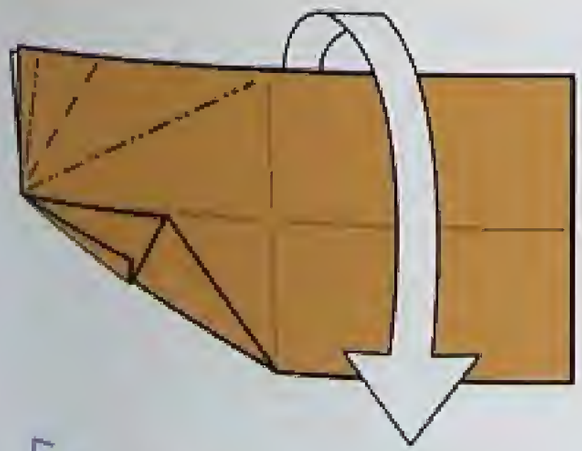


2

3 Carefully form a crease that joins the left and lower ends of the two creases.

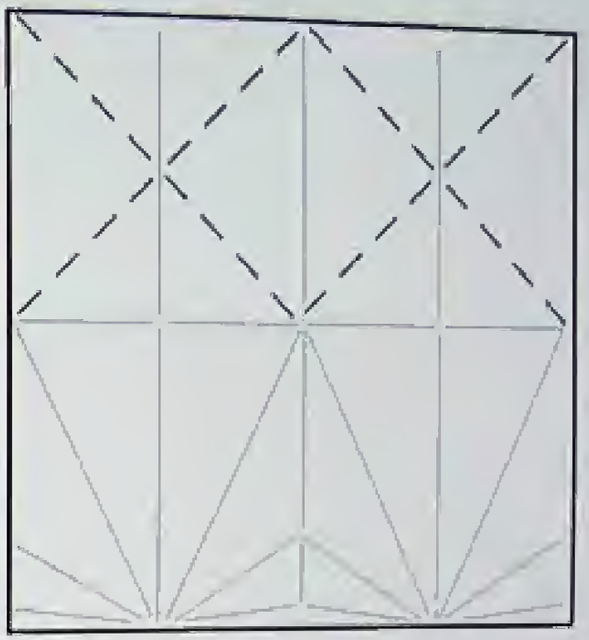


4 Fold the upper corner down along the horizontal halfway crease. Fold back the tiny section that overlaps.

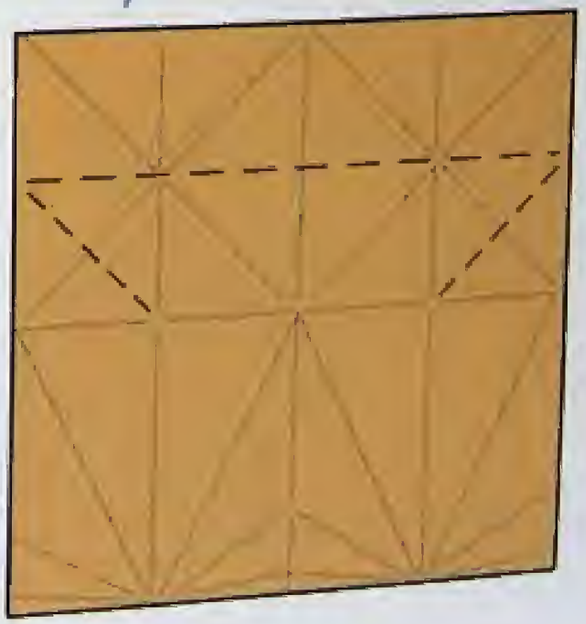


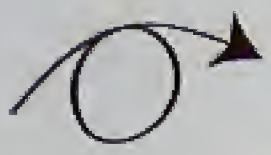
5 Here is the result. Repeat the last two steps on the top left corner, then unfold back to the square.

6 Rotate the paper to this position. Add diagonal creases in both upper quarters.

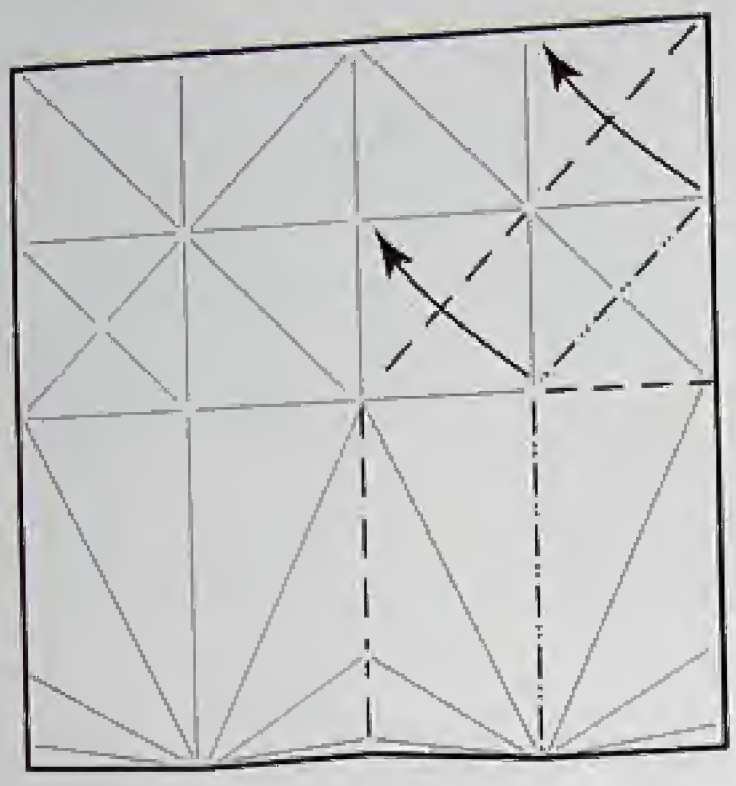


7 Turn the paper over. Add these creases.

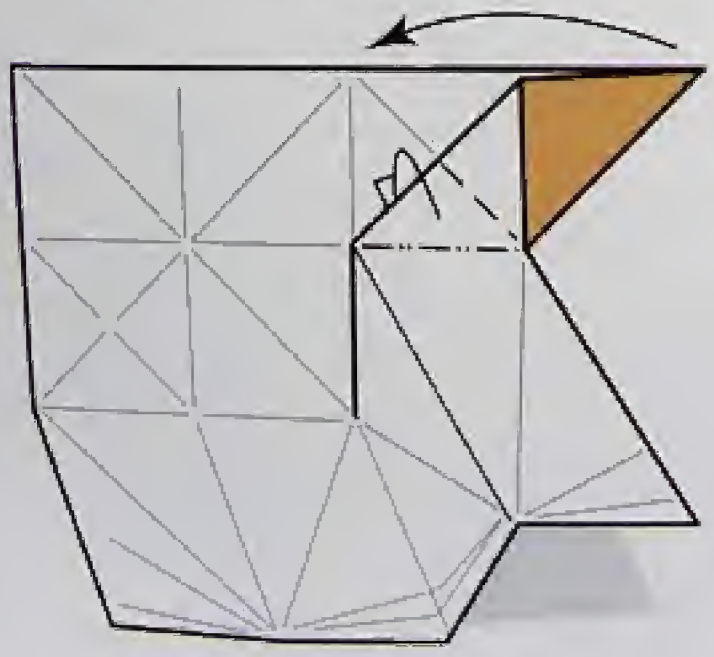


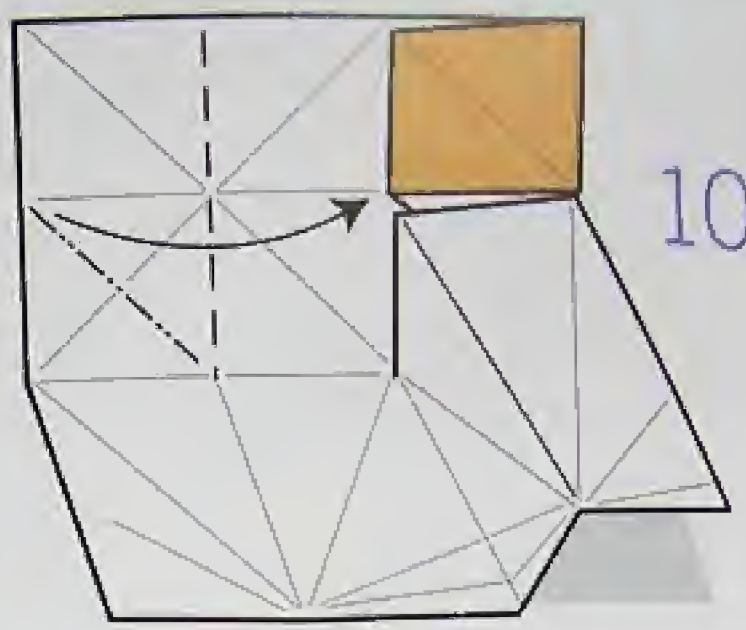


8 Turn back to the white side. Form the paper into three dimensions using these creases.



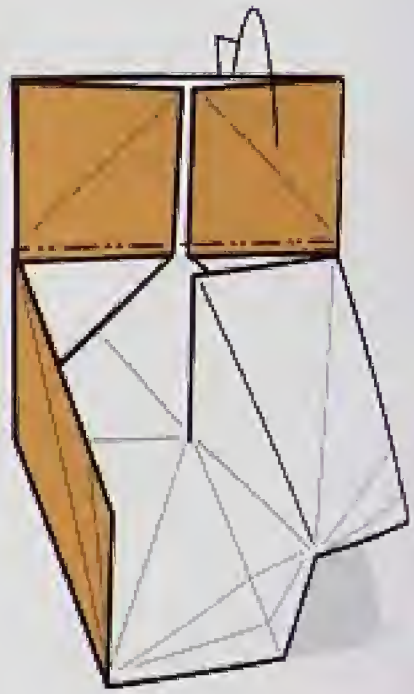
9 Fold a small triangular flap behind and down, swivelling the outside corner inwards at the same time. Don't force this move. Check the next diagram.

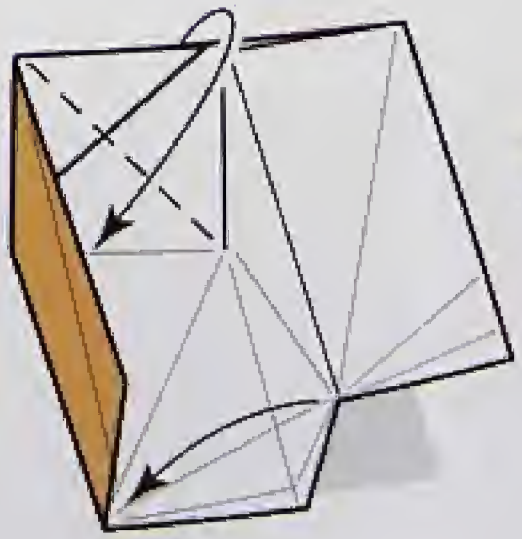




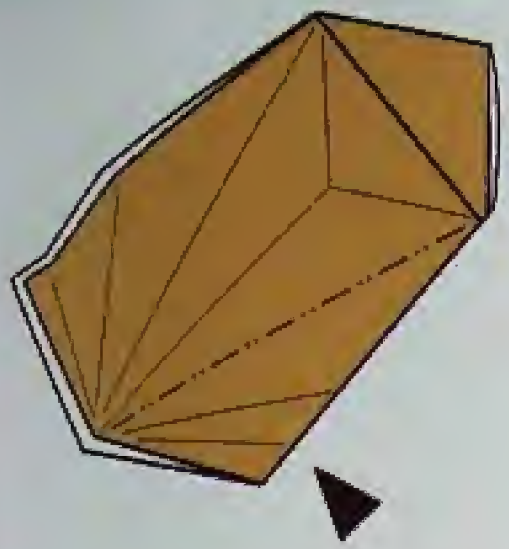
10 Form the left side into a corner

11 Fold the upper section behind.

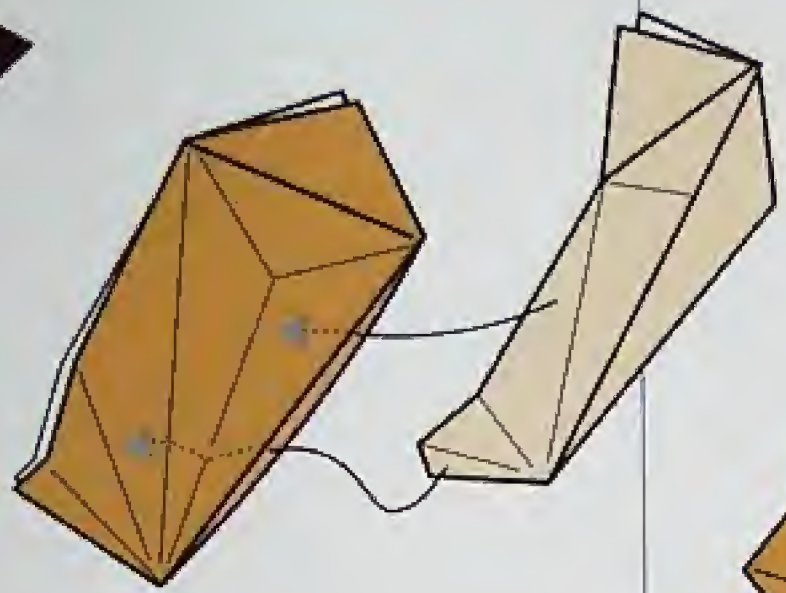




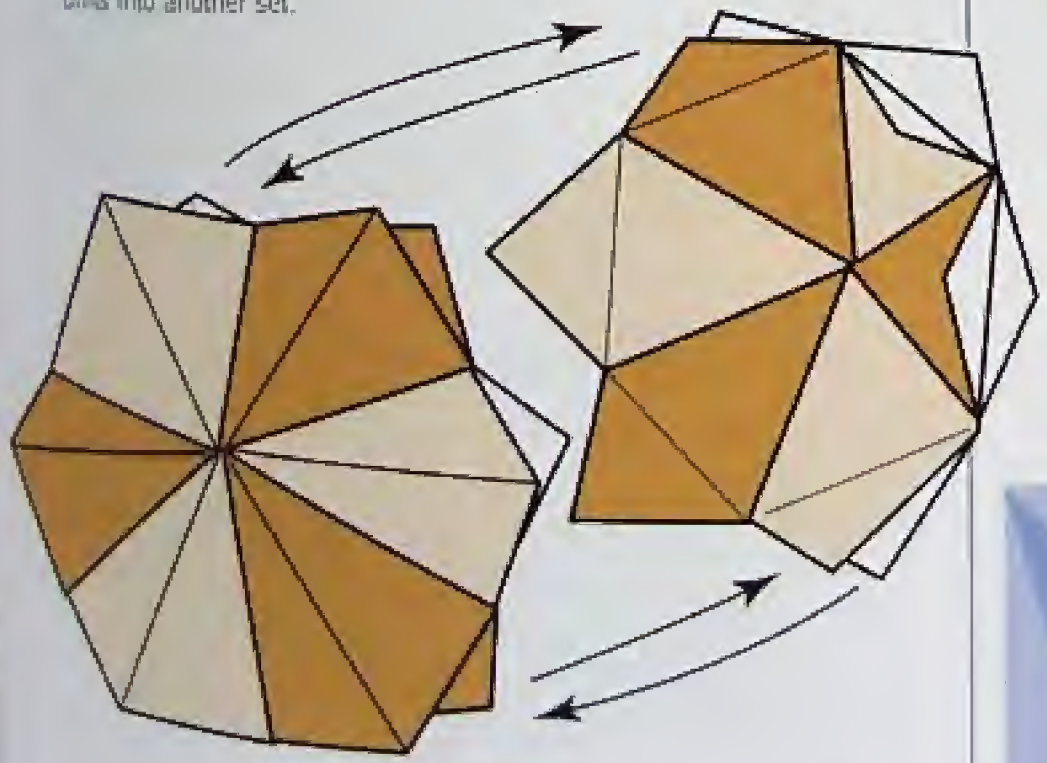
12 Fold along the crease shown, swinging the right half of the paper into the matching pocket on the other side. Fold carefully



13 This should be the result. Make an inside-reverse fold on the corner and tuck the paper within the other layers. It's easier than it looks.

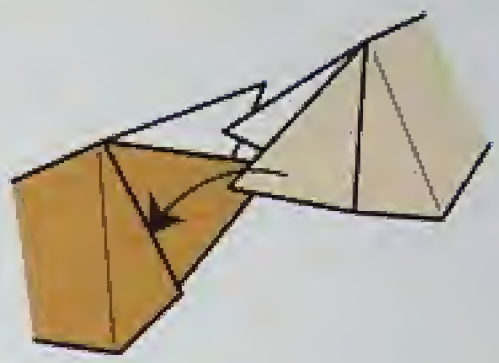


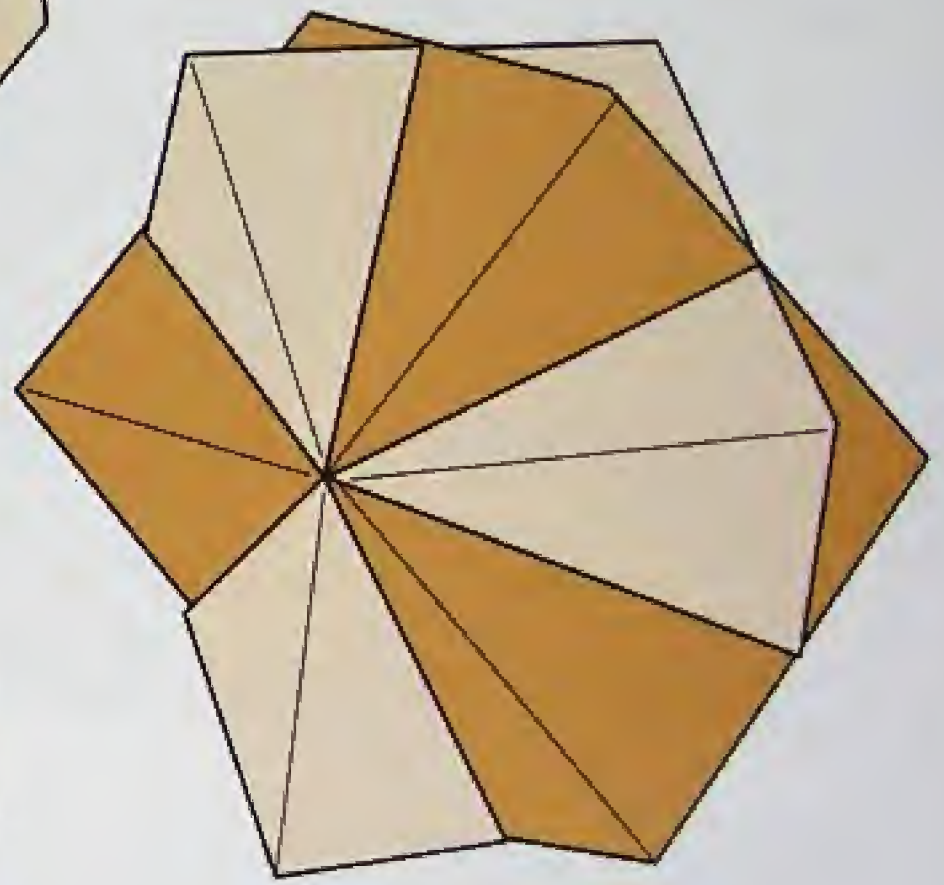
14 Fold twelve units, six of each colour. Tidy up the creases and make all corners sharp. Slide one unit into a contrastingly coloured unit, and ensure all creases overlap properly. Join a set of six units and then join the other six units into another set.



15 Line up the two sets of six so that opposite colours meet. Start to interlock each section.

16 This is how the flaps interlock as the units join. Join both sets of six loosely, then tighten up.





17 The completed double cube

CHALLENGE

You don't need a challenge at this point, you need a rest! Eventually you'll want to fold the design again more carefully.

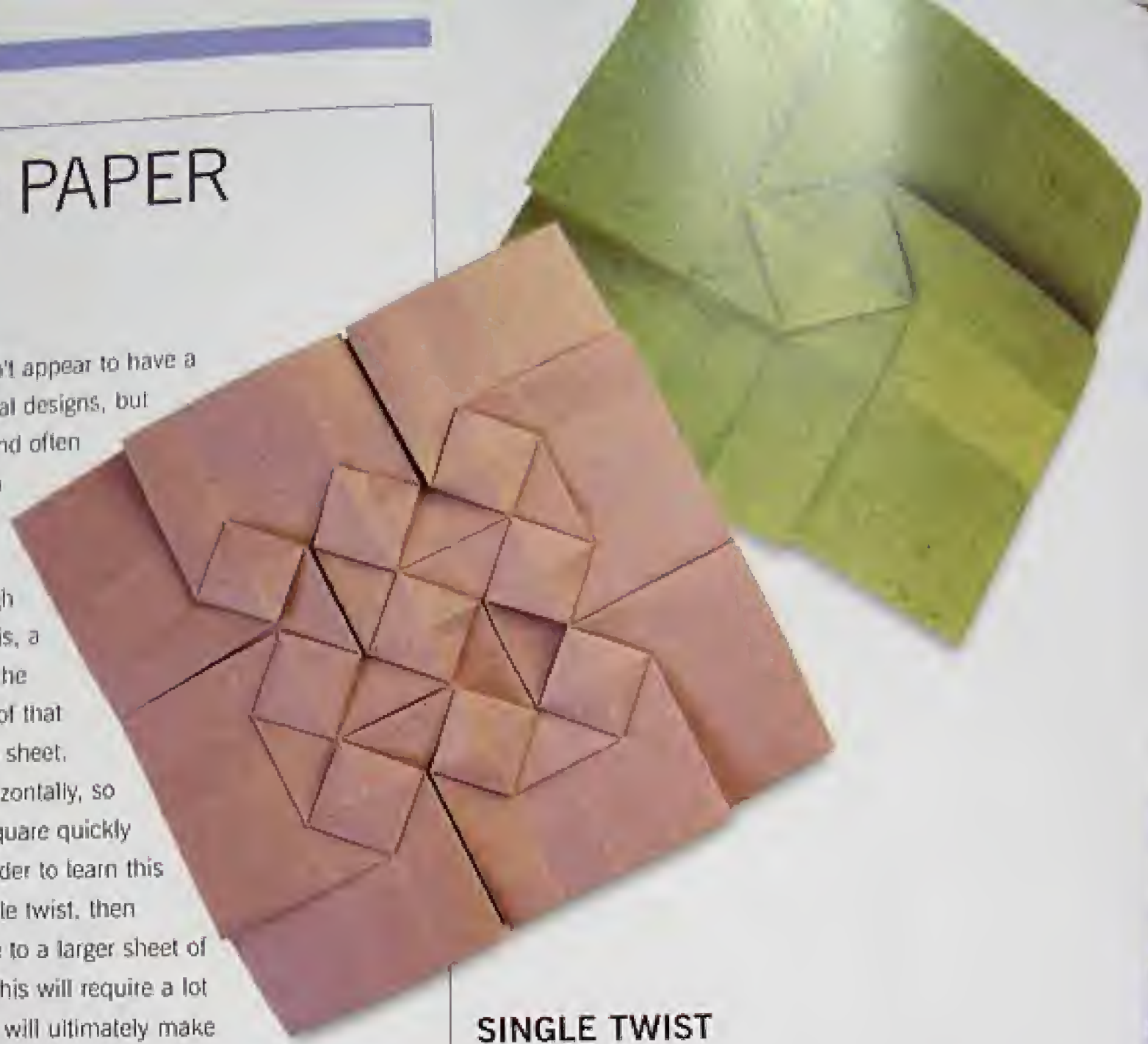
Inside reverse PAGE 18

TWISTED PAPER

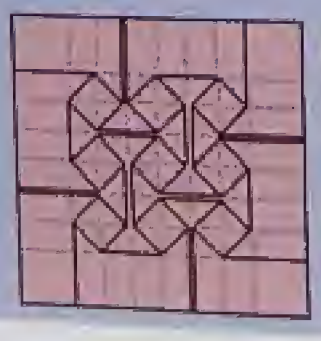
Concept by Shuzo Fujimoto

9 AND 7 STEPS

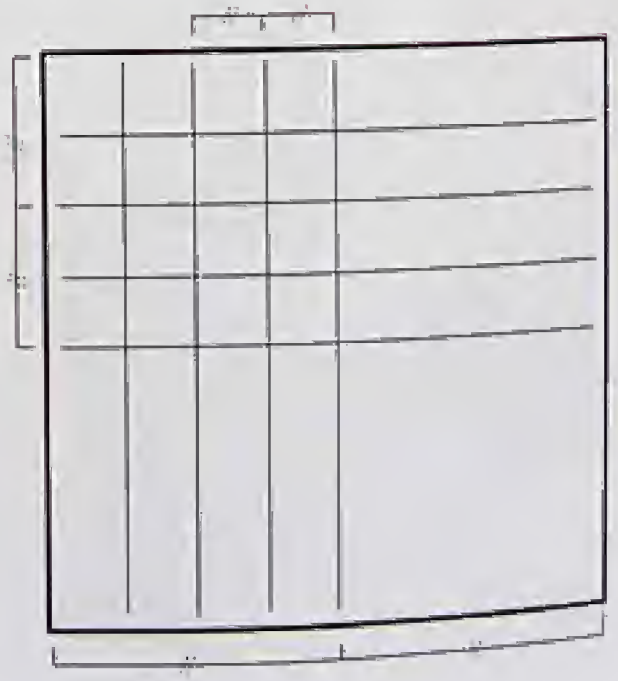
Some origami techniques don't appear to have a clear place within conventional designs, but are nonetheless fascinating and often highly decorative in their own right. This technique allows you to take a square within the paper and rotate it through 90 degrees. In order to do this, a vertical strip of paper that is the width of half of the diagonal of that square is lost underneath the sheet. The same amount is lost horizontally, so you can see that the initial square quickly becomes much smaller. In order to learn this technique, try creating a single twist, then applying it on a smaller scale to a larger sheet of paper, creating nine twists. This will require a lot of patience on your part, but will ultimately make you a better folder.



Paper size:
20 cm (8 in.) square
Finished model:
15 cm (6 in.) square

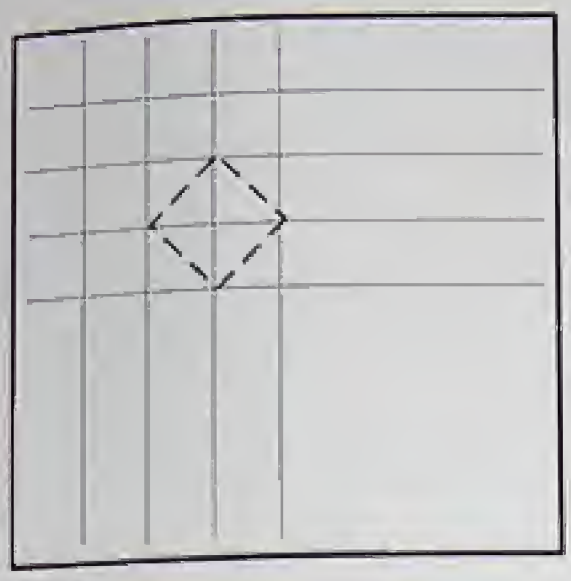


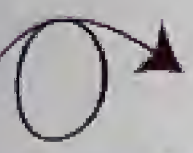
SINGLE TWIST

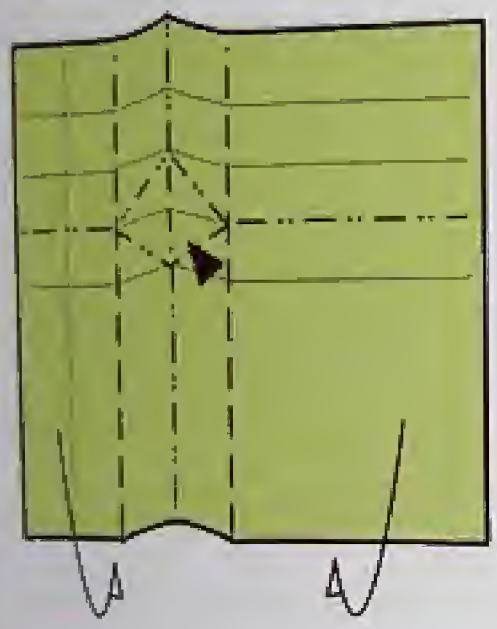


1 Start with a square and all the future creases followed by the quarter and eighth creases in one quarter of the square

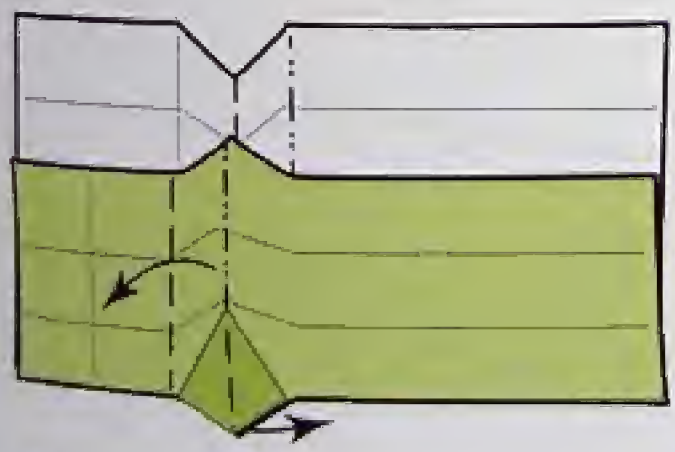
2 Form a square using valley folds at 45 degrees to the existing creases





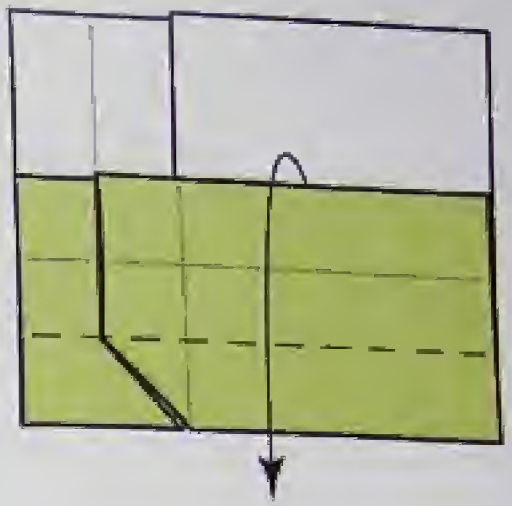


3 Turn the paper over. Fold some of the paper underneath, pressing in the vertical crease at the centre of the small square.



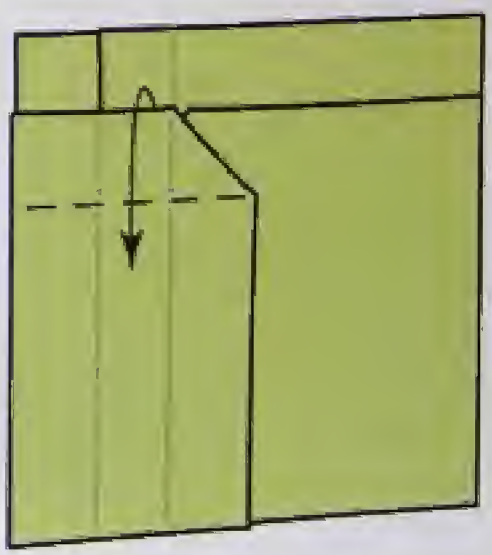
4 This is the result. Fold the upper section to the left and fold the matching section underneath to the right.

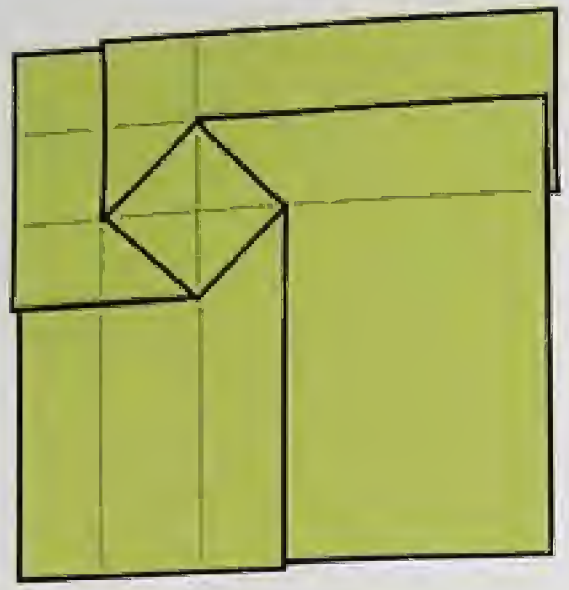
5 Fold down using the quarter crease.

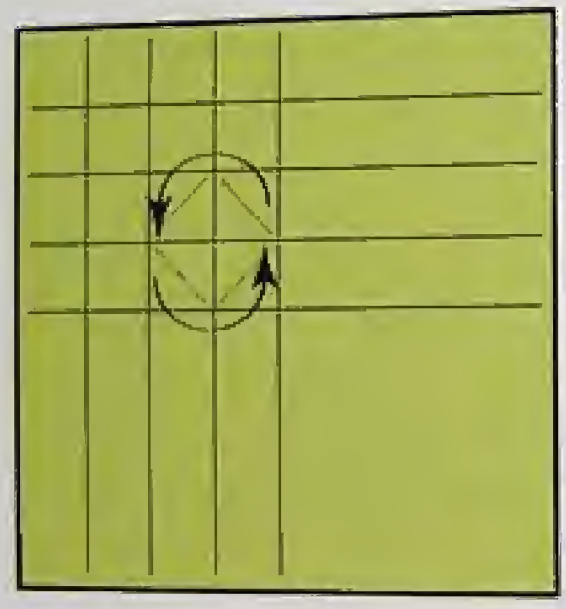


6 This is the result. Turn the paper over

7 Fold down the three-eighths section







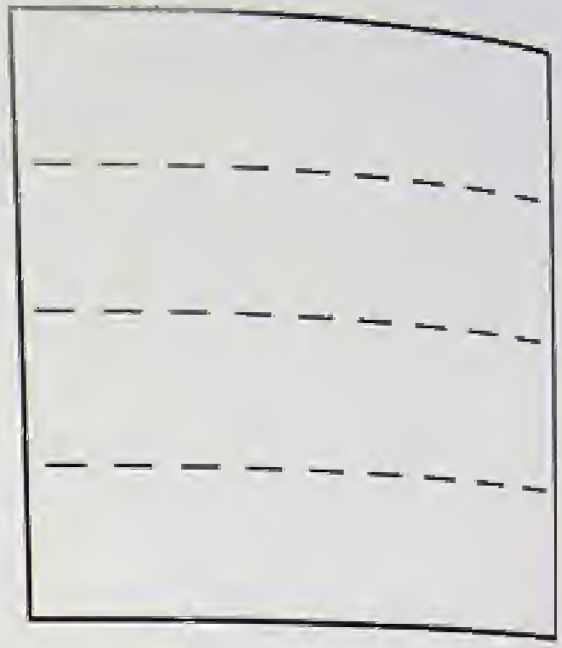
8 You have completed a single twist. The illustration on the left shows the direction of the twist on the original square. Use this to help you when you try out the nine-twist model.

FOLDER'S TIP

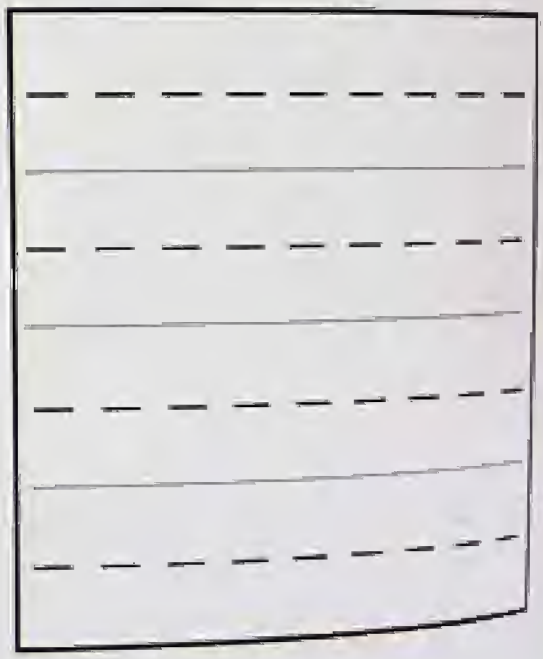
Although this technique is essentially a decorative one, you will learn a great deal about how to hold and manipulate paper while you fold. Keep trying to find new, easier methods each time.

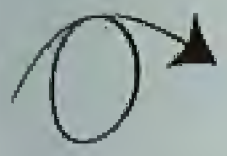
NINE-TWIST MODEL

1 Start with a much larger square. Add quarter creases.

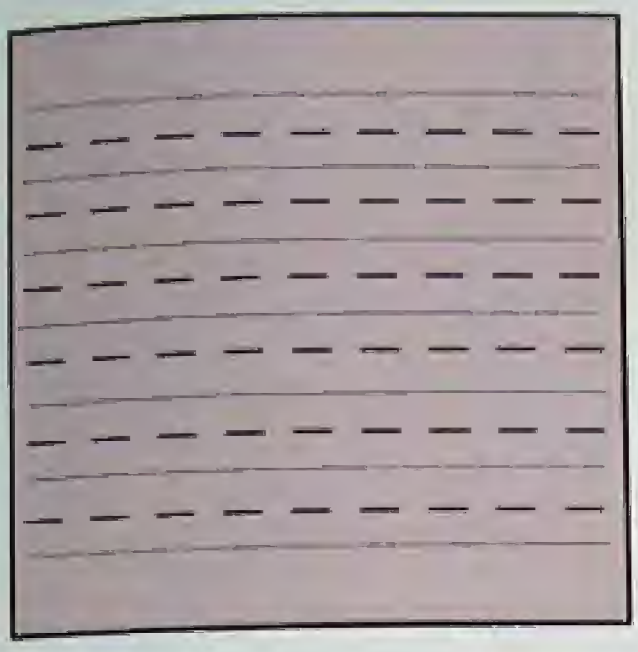


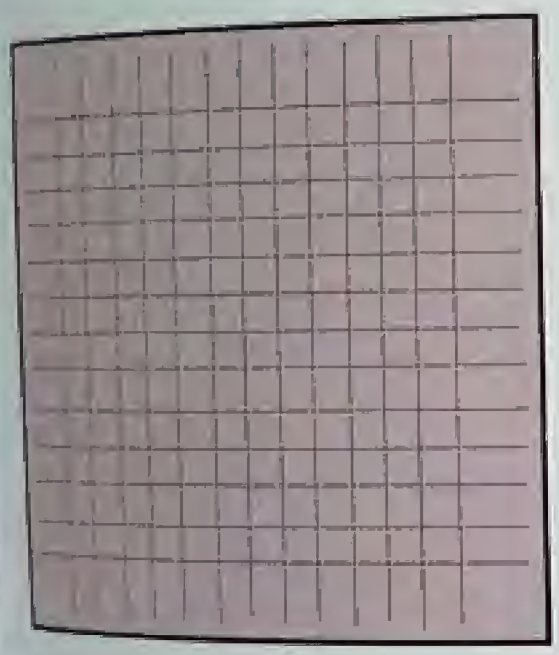
2 Then add eighth creases.



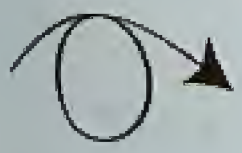


3 Turn over and add sixteenth creases.

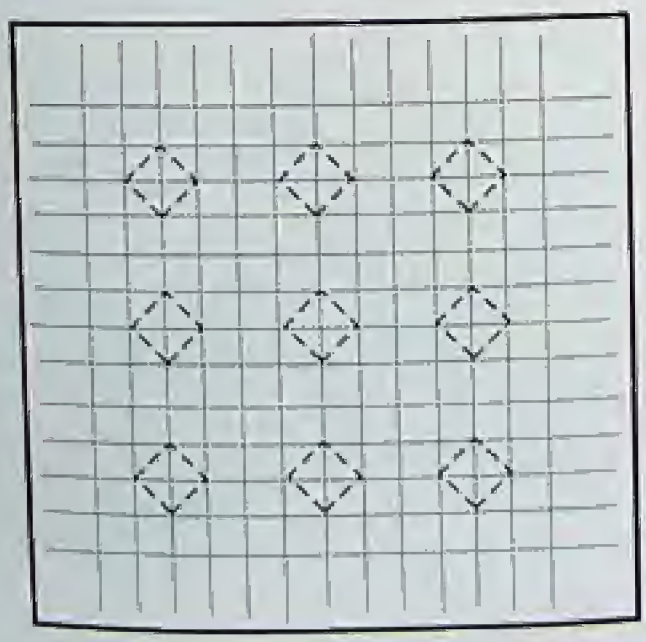


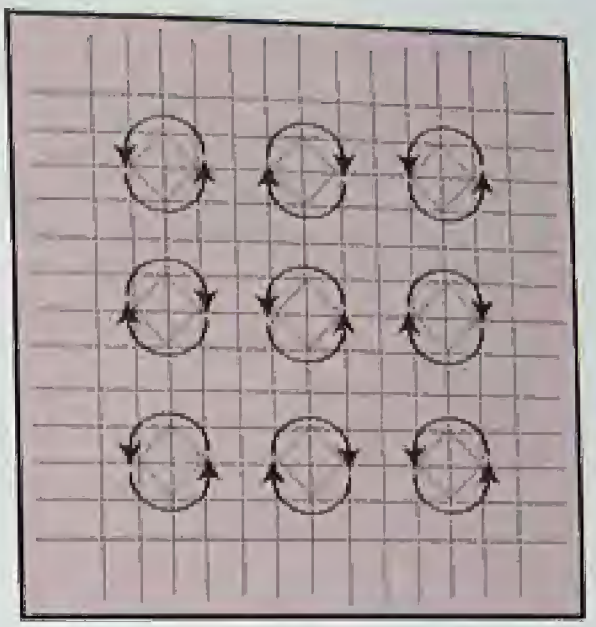


4 Repeat vertically to produce this pattern.

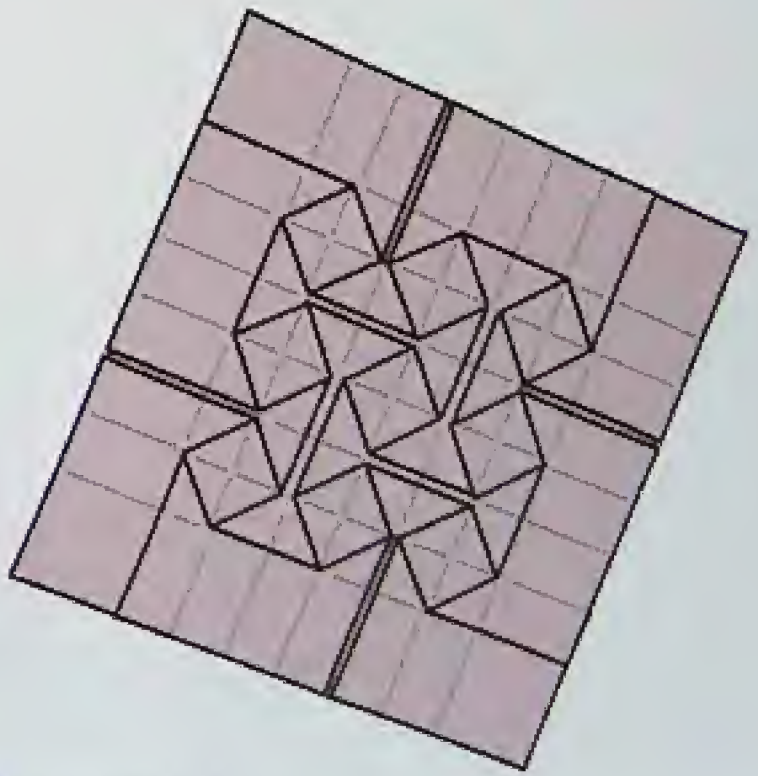


5 Add the creases for the twisted sections.





6 Here are the directions for the individual twists. Work through them as best you can; by the time you've finished, you'll be in a much better position to make a neater version. As you'll learn by playing with the paper, there are various ways in which you can make life easier for yourself.



7 This is the result.

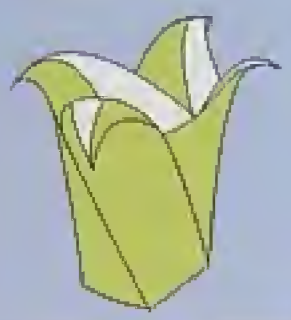
FLORAL POT

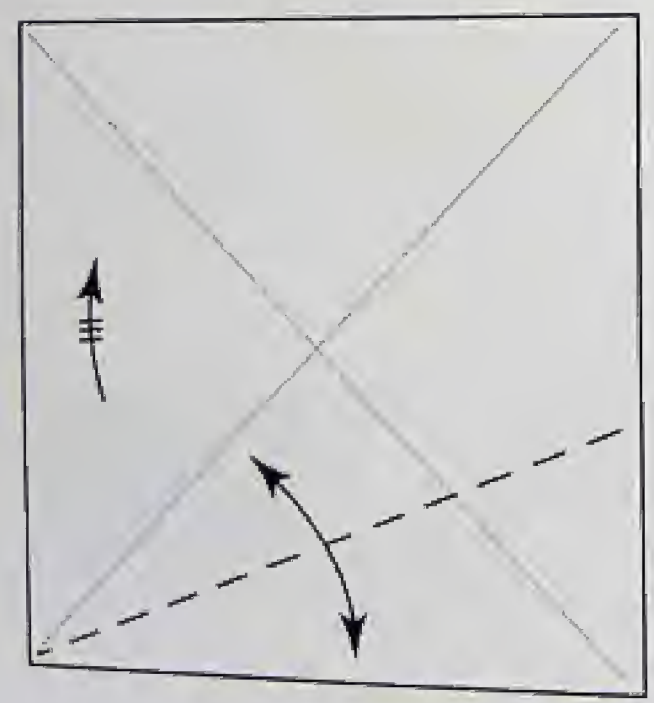
Design by Jeff Beynon

7 STEPS

The aim in creating origami pots or containers is to keep them simple and elegant, but make sure that they hold their form. While the creasing for this design may seem quite complicated, it is in essence a very simple model. The creases you need are all shown in Step 5. The preceding steps are used to create and locate these creases precisely.

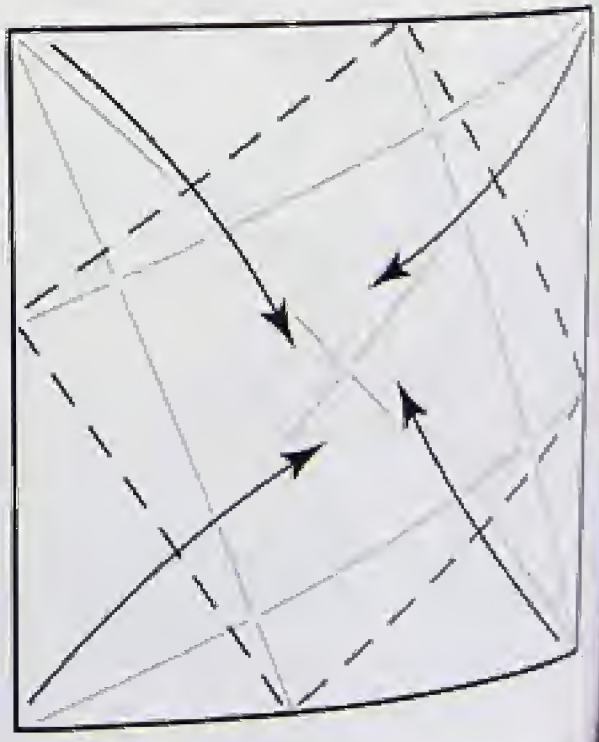
Paper size:
18 cm (7 in.) square
Finished floral pot
13 cm (5 in.) high

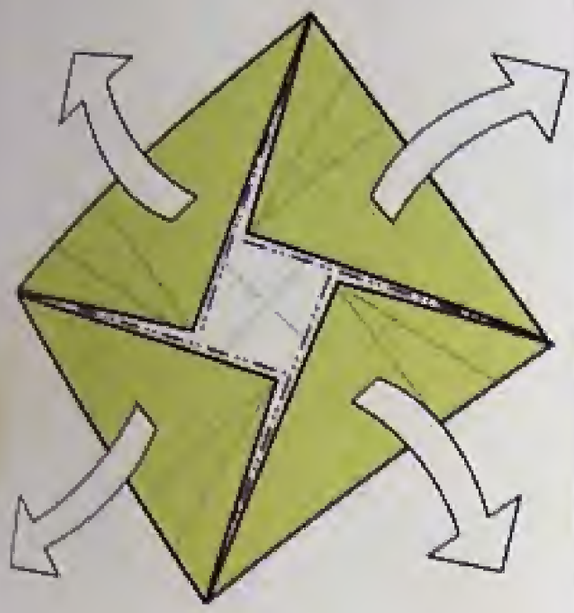




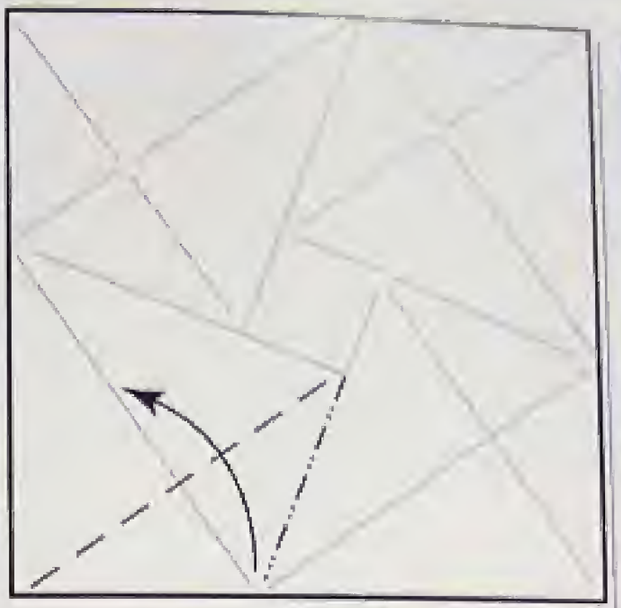
1 Start with a square, white side upwards, with both diagonals creased. Fold one side to the diagonal, crease and unfold. Repeat the same fold on each side.

2 The previous creases have formed the reference points for another four folds. Make sure you crease carefully and accurately.





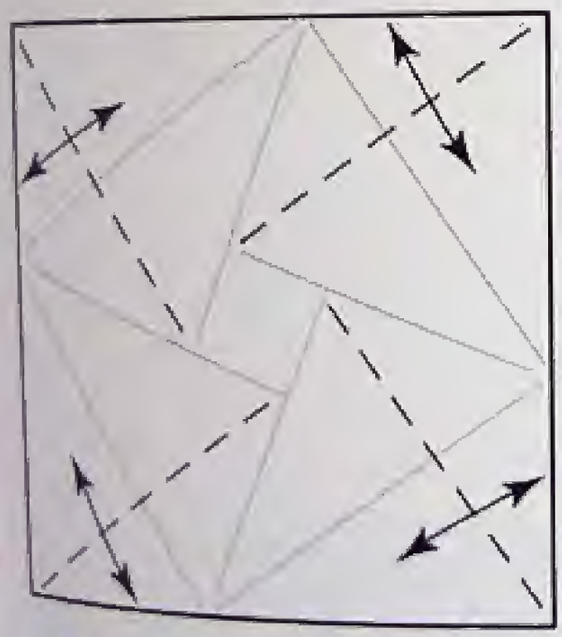
3 This will be the result. Add mountain creases that lie along raw edges. Unfold back to the square.



5 Start to form the paper into three dimensions, using these creases.

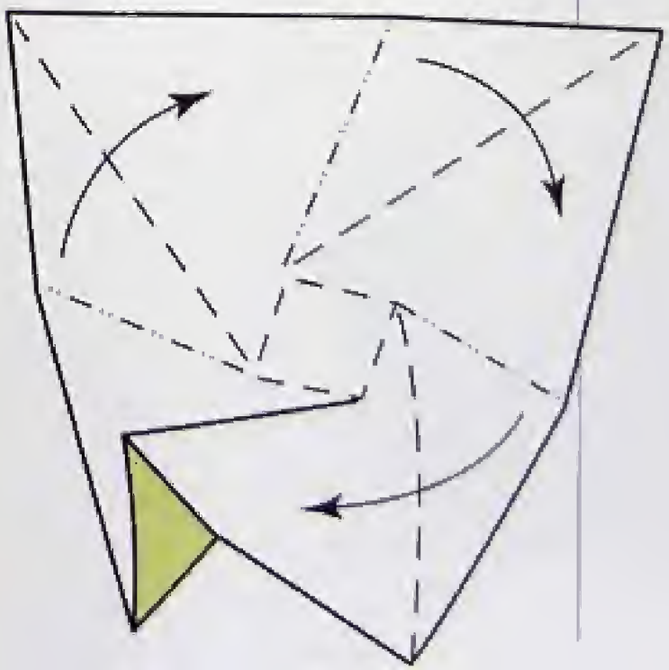
FOLDER'S TIP

This is a design that needs folding very carefully to create the proper creases to look at its most effective. Don't worry if your models aren't perfect, just have another go!

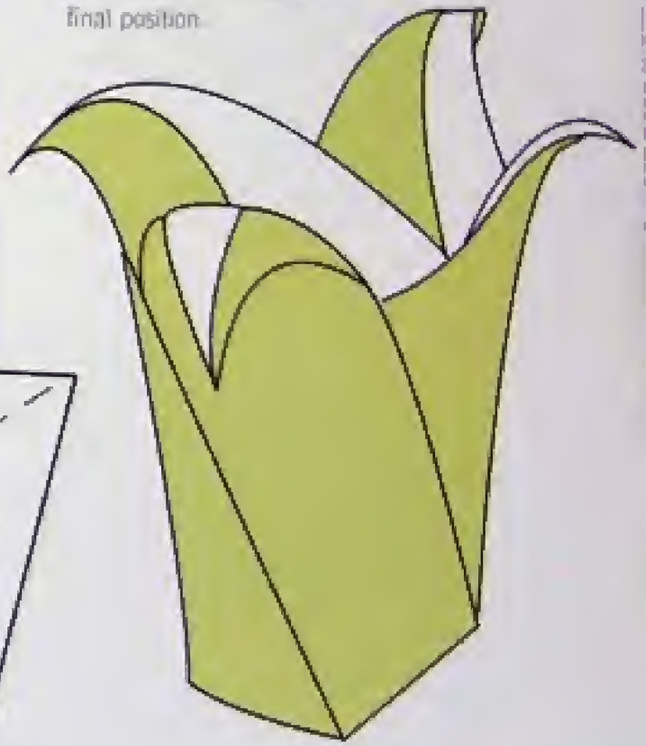


4 For clarity, some of the earlier creases are not shown on this diagram. Carefully add the four creases marked.

6 Continue on the other three sides. The small square in the centre forms the base of the pot.



7 Fold carefully and the paper will hold quite firmly in this final position.



FLOWER

Design by Ligia Montoya

23 STEPS

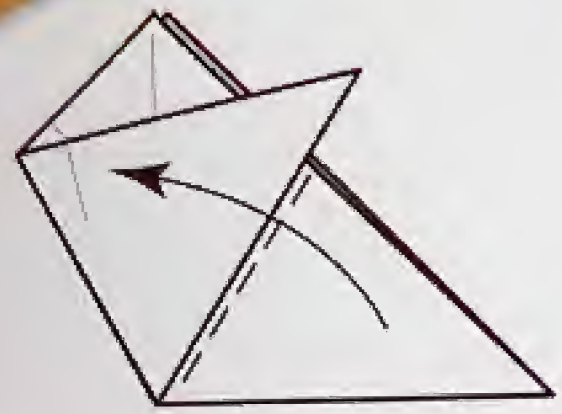
Montoya was an Argentinian folder of great talent, part of the vanguard of folders who revitalized the traditional Japanese forms. Her importance as a creative folder cannot be overstated. This model is typical of her elegant designs, utilizing techniques that many other folders have since rediscovered. It requires accurate creasing and a delt touch if you start with anything other than a large hexagon. A method to create a hexagon is given first.

Paper size:
20 cm (8 in.) square
Finished flower:
10 cm (4 in.) high

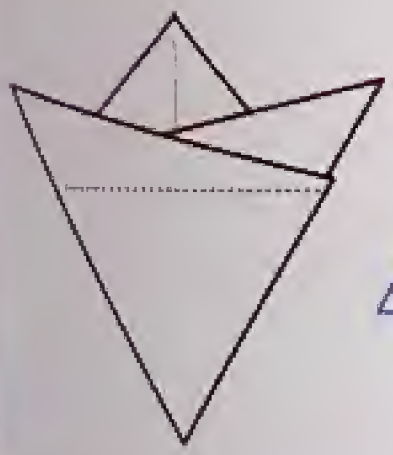
FOLDING A HEXAGON

1 Starting with a square, crease both diagonals and fold in half. Add part of the upper eighth and halfway creases.

2 Fold over from the centre of the lower edge, so that the halfway crease touches the upper eighth crease.



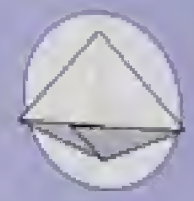
3 Fold the other side over the first side.



4 Cut off the top horizontal section and open the lower half.

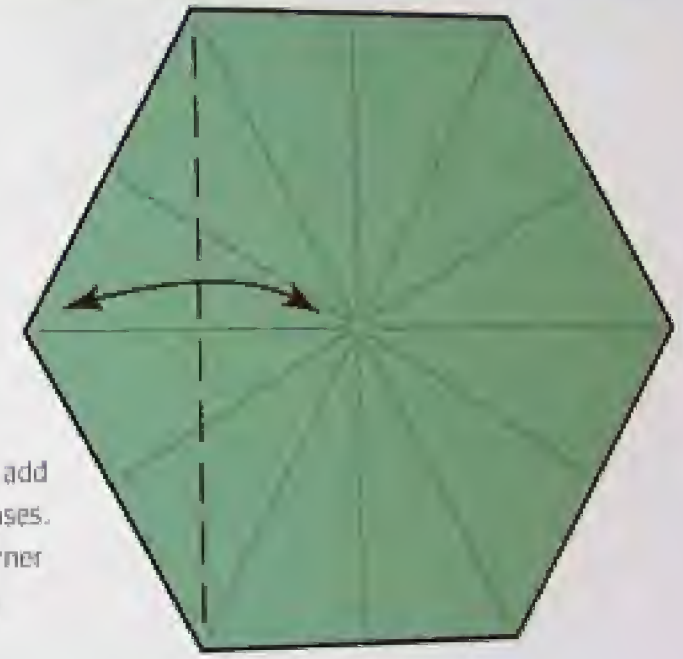
CHALLENGE

Can you find another way of making a hexagon from a square? Use folding 60-degree paper (page 34) as inspiration.

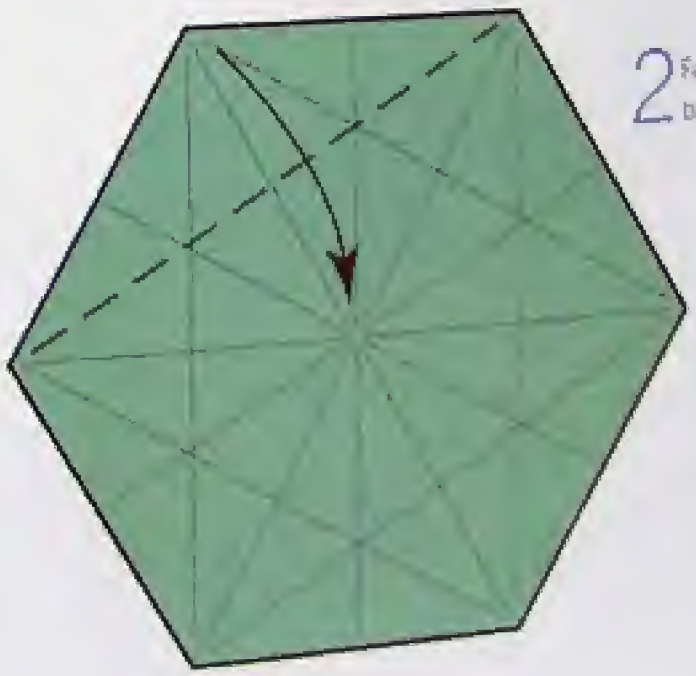


RABBIT'S EAR REMINDER

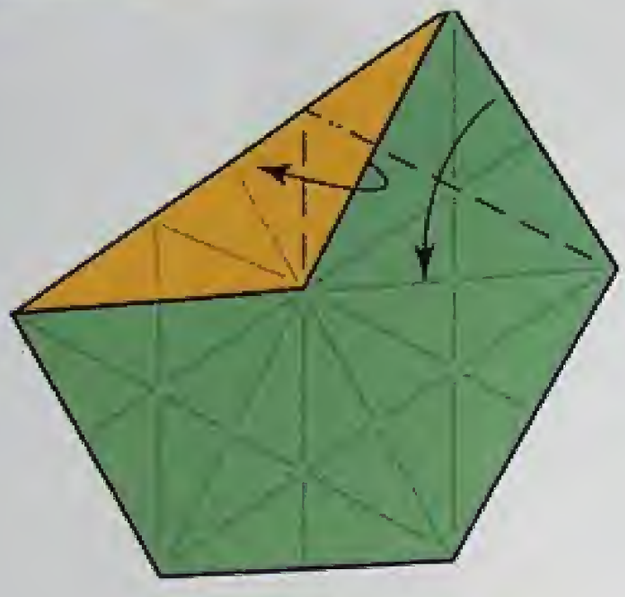
1. Pre-crease one edge to the diagonal.
2. Repeat with the other edge.
3. Put in both creases at once.
4. Complete.



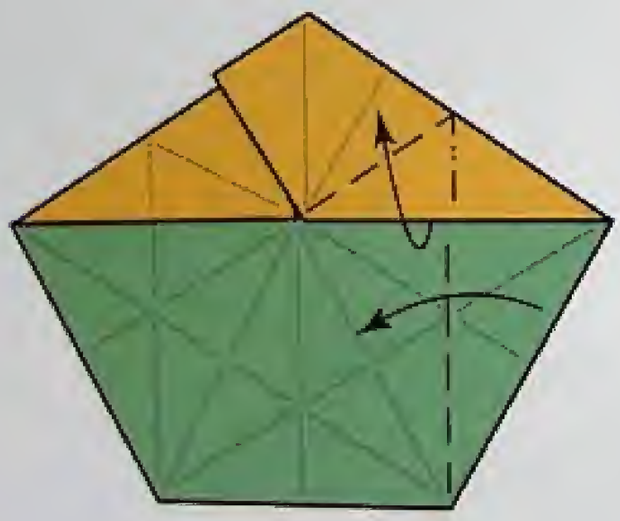
1 Start with a hexagon and add all radial creases. Fold each corner to the centre, crease and unfold.



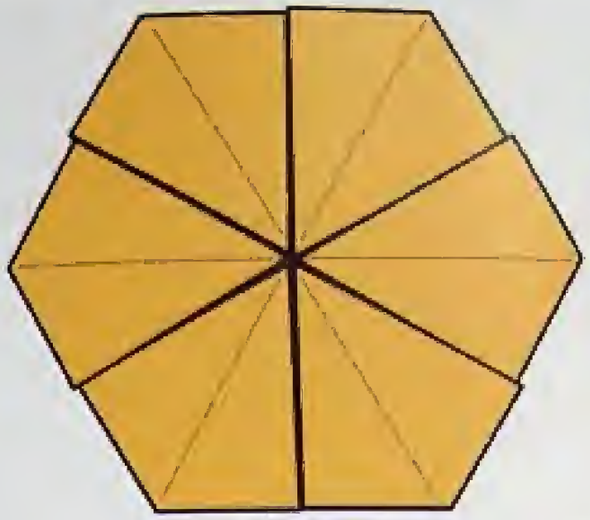
2 Fold one corner back in.



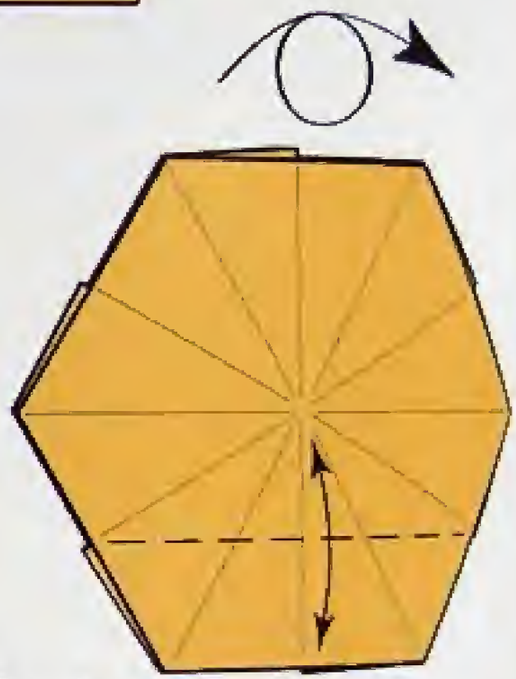
3 Form a kind of rabbit's ear (see reminder panel, page 119).



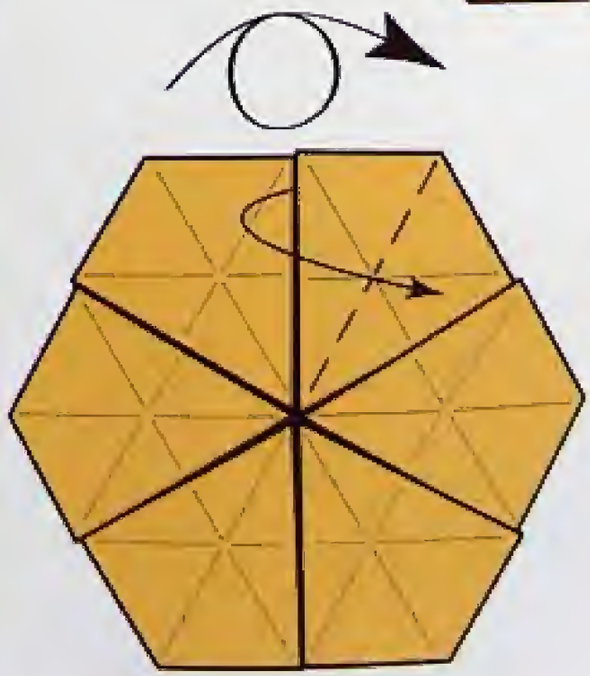
4 Repeat on the next corner and continue all round the hexagon.



5 This is the result. Turn the paper over.

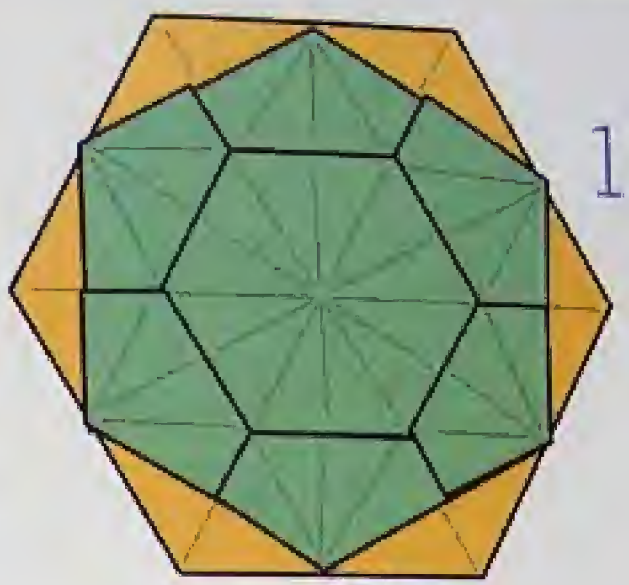


6 Fold each side to the centre, crease and unfold.

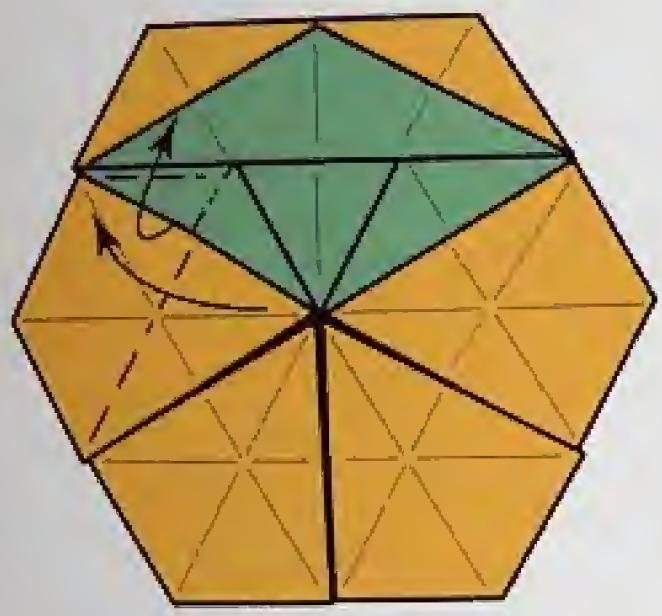


7 Turn over again. Fold over one corner to reveal a pentagonal flap.

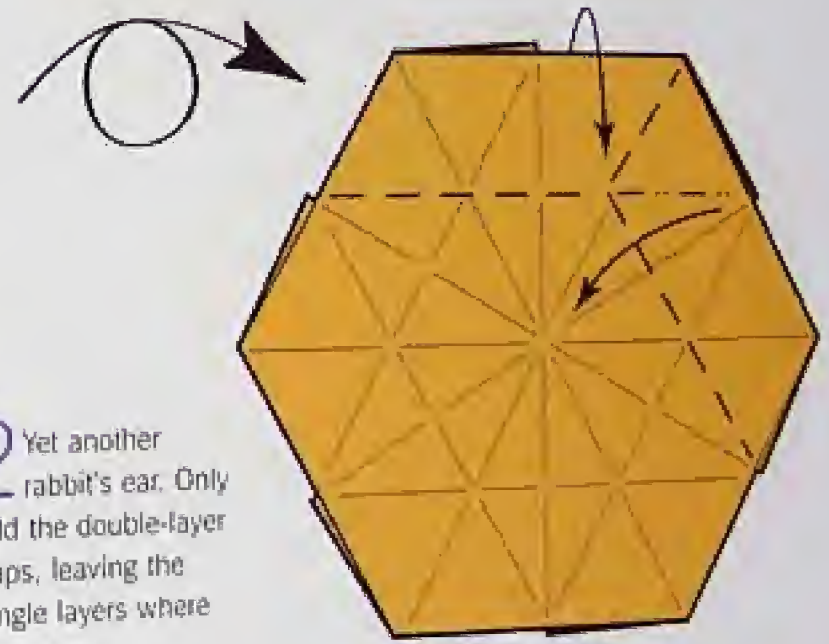
8 Fold the central corner up as far as it will go.



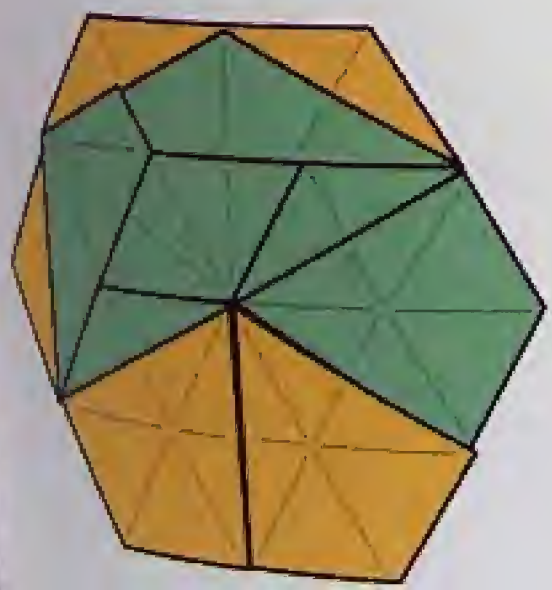
11 This is the result. Turn the paper over.



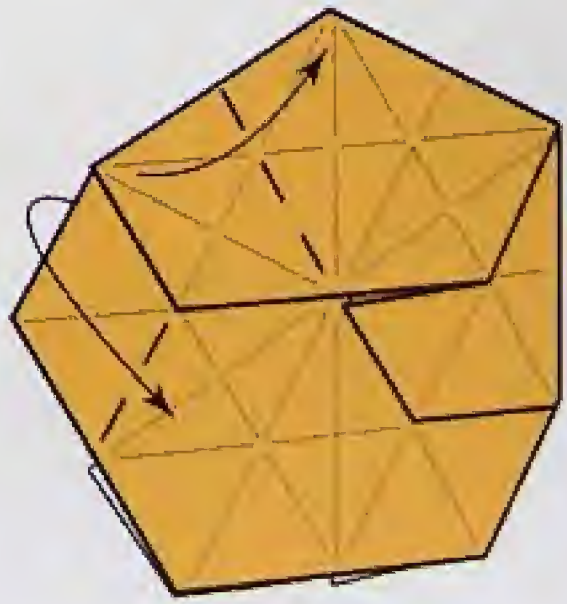
9 Once again, form a kind of rabbit's ear.



12 Yet another rabbit's ear. Only fold the double-layer flaps, leaving the single layers where they were.

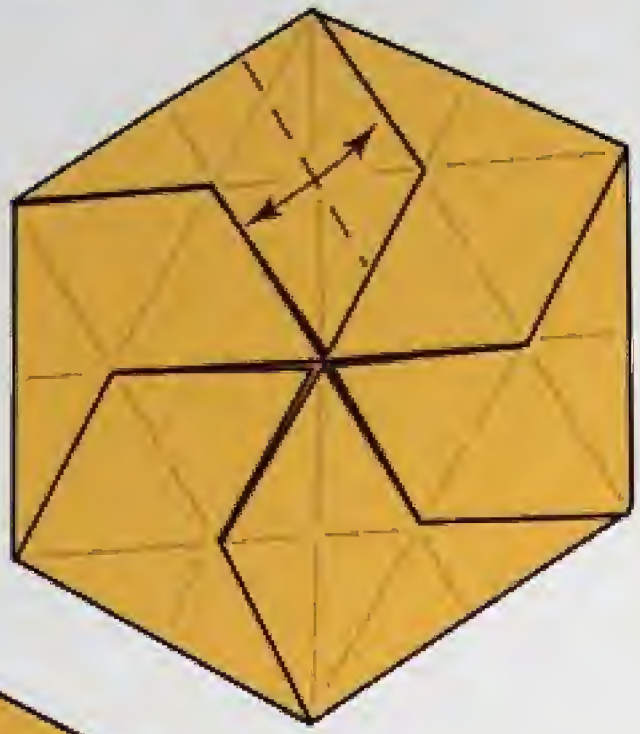


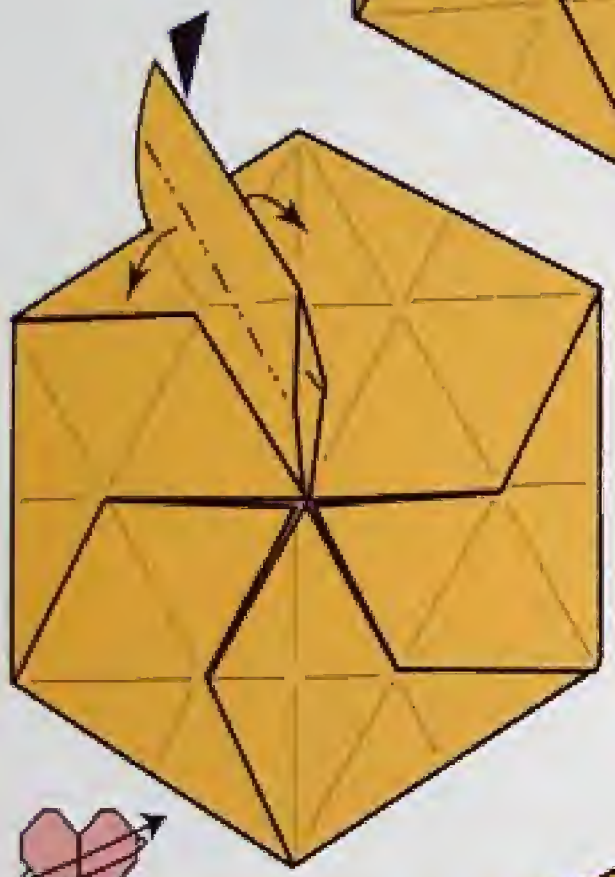
10 The rabbit's ear should look like this. Repeat the move on each side. You'll need to rearrange the layers on the last corner.



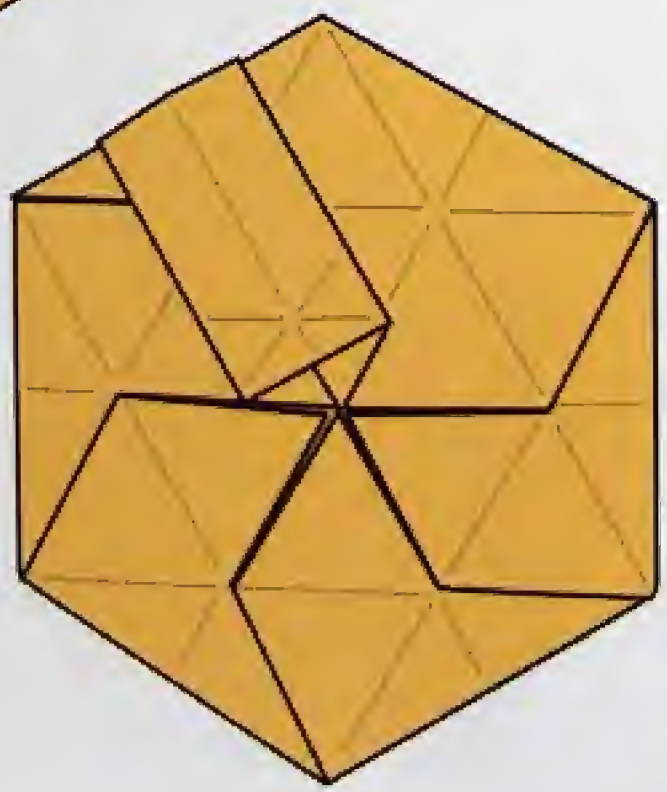
13 Work your way around, repeating the move.

14 Fold a flap in half, crease well, then unfold.



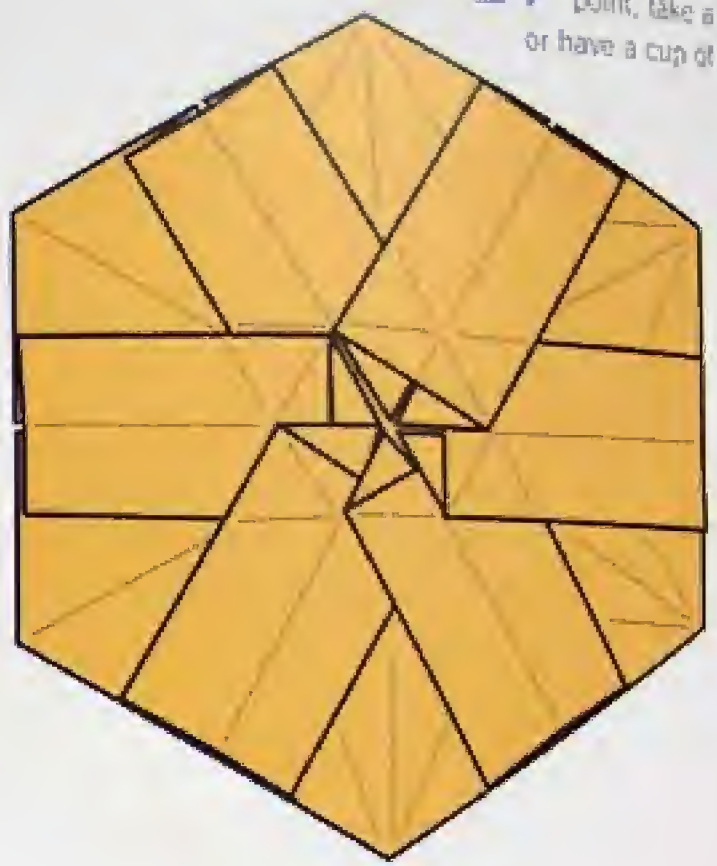


15 Lift up the flap and squash it symmetrically. You may need to push your finger inside. A new crease is formed as the paper flattens. Go slowly!

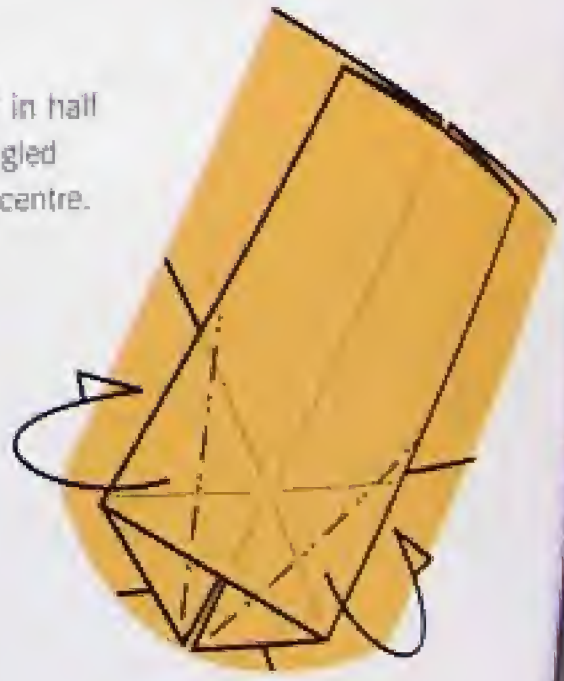


16 This is the result. Repeat on the remaining flaps.

17 This is the result. At this point, take a deep breath or have a cup of tea.



18 Mountain-fold in half behind the angled sections near the centre.

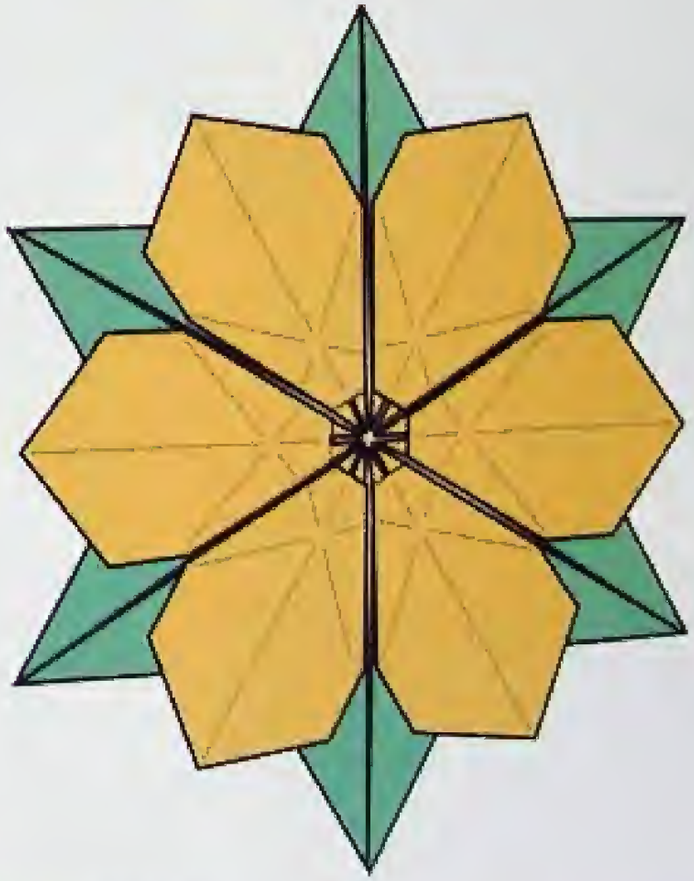


19 Crease the outer corners, starting where the folded edge meets a crease on the layer underneath.

20 Now make an inside-reverse fold on the upper corner

21 Finally, valley-fold the lowest layer, taking half of the sunken section with it.

22 Repeat these steps on the remaining corners



23 The finished model. Congratulations!

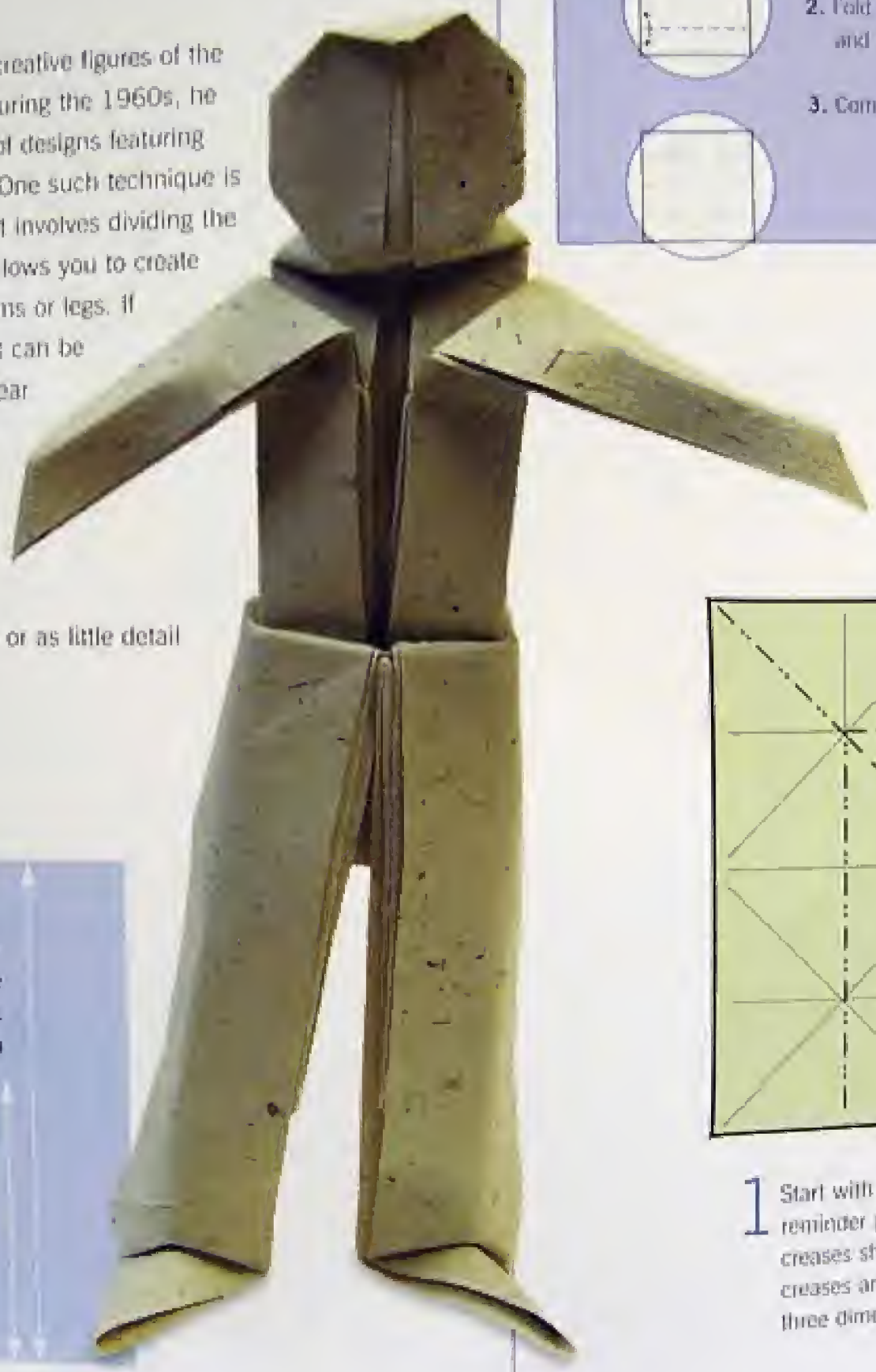
ALSO SEE
Reverse folding page 12

ELIAS FIGURE BASE

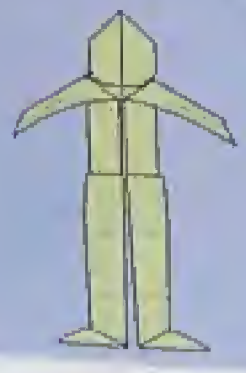
Design by Neal Elias

19 STEPS

Neal Elias was one of the major creative figures of the early days of American folding. During the 1960s, he developed an incredible number of designs featuring novel and adaptable techniques. One such technique is known as box-pleating, because it involves dividing the paper into a grid of boxes. This allows you to create long flaps that can be used as arms or legs. If you have enough paper, in fact, it can be used to create almost any rectilinear shape. Here are the instructions for his figure base, which recreates the basic elements of the human body. These can then be refined with smaller shaping creases, to add as much or as little detail as you require.

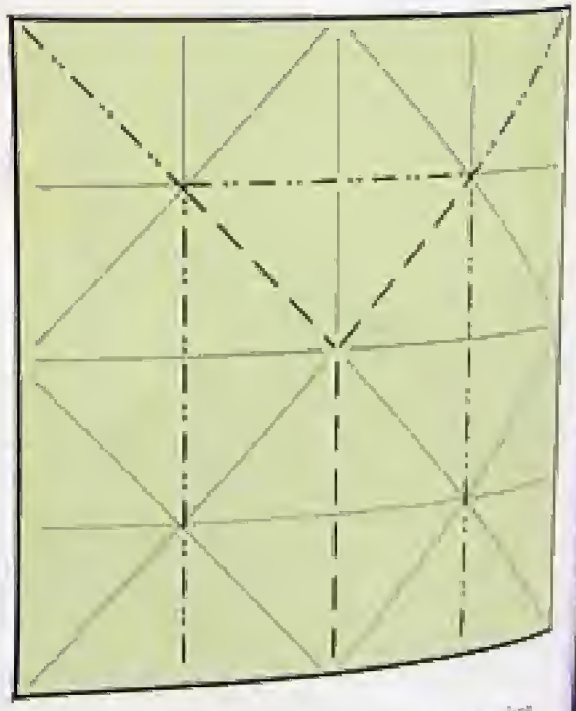


Paper size:
30 cm (12 in.) square
Finished figure:
25 cm (10 in.) high

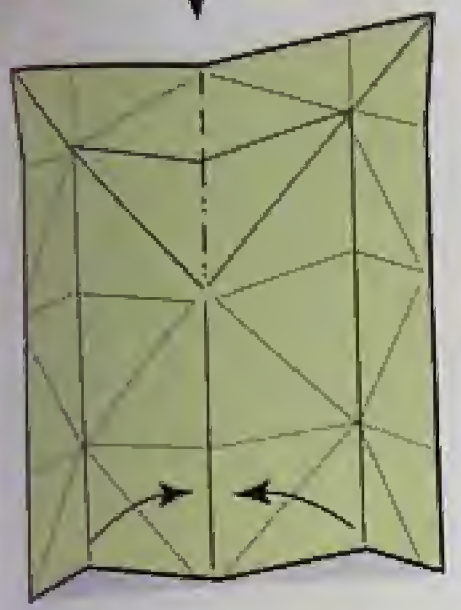


MULTIFORM BASE REMINDER

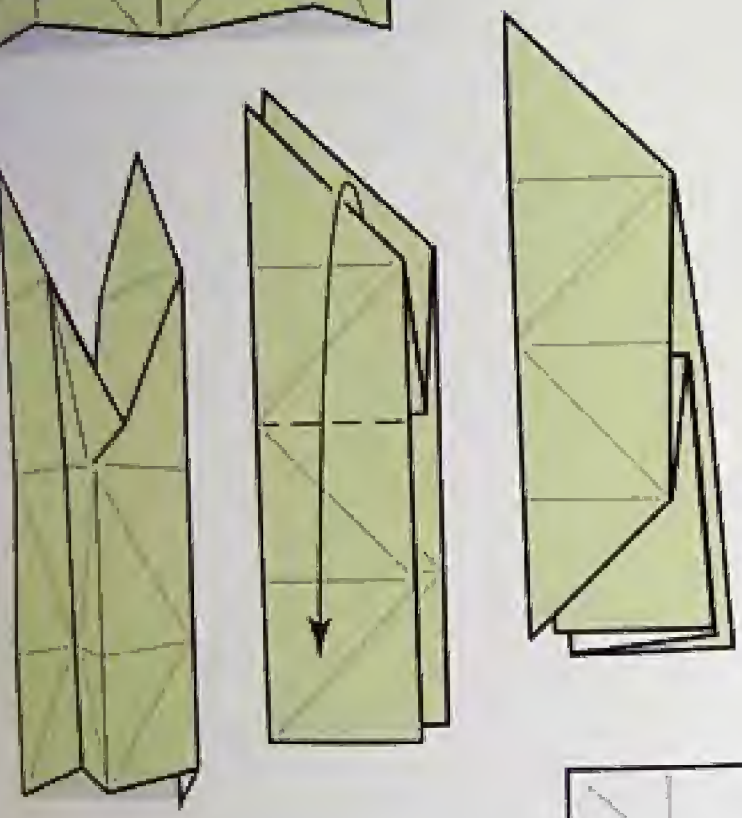
1. Start with a waterbomb base (often pre-crease each corner to the centre
2. Fold each side to the centre, crease and unfold
3. Completed multiform crease pattern



1 Start with an unfolded multiform base (or reminder panel, above) or simply add the creases shown one at a time. Emphasize the creases and start to form the paper into three dimensions.



2 As the paper rises, introduce the creases shown.

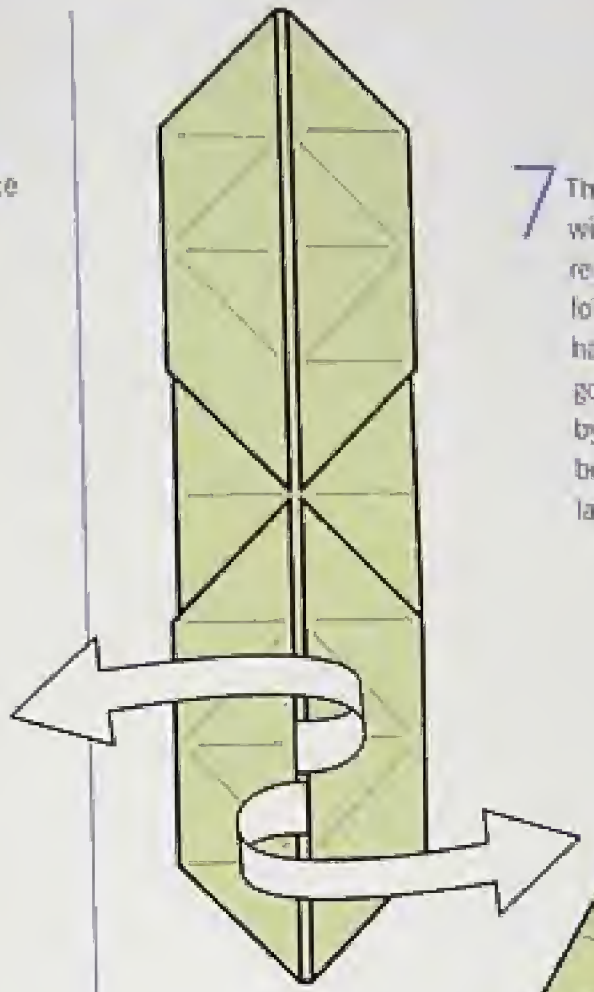


3 The move is almost complete – keep flattening.

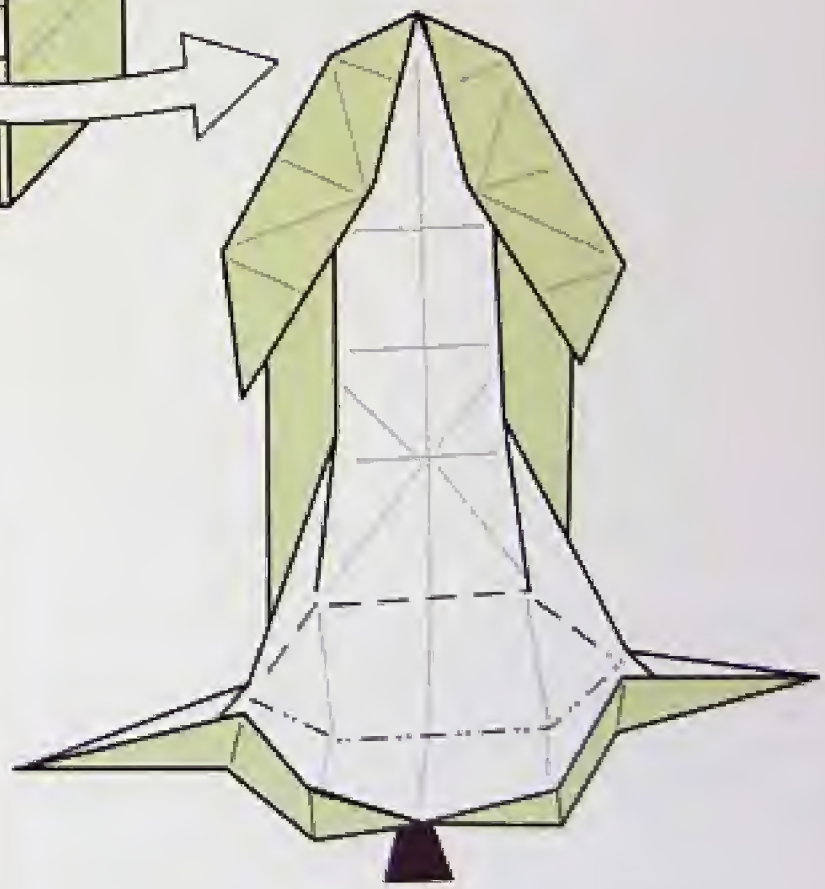
4 Fold down the flap.

5 You have completed an Elias stretch. Study the paper carefully.

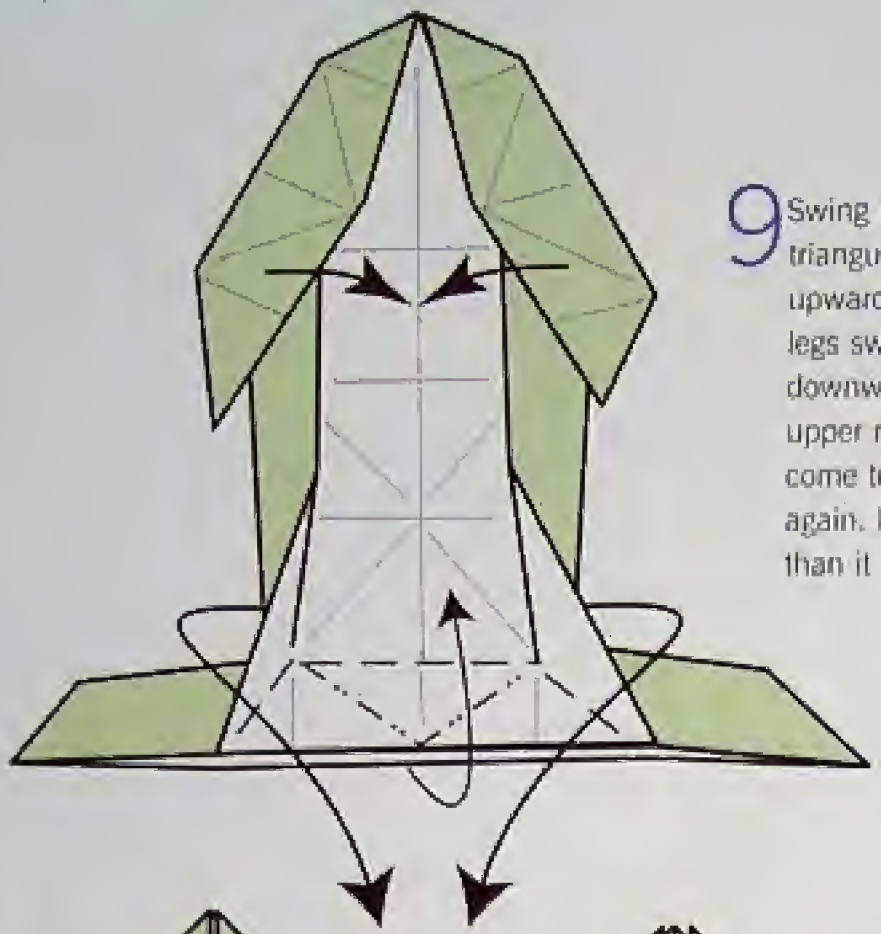
6 You have now practised the techniques needed for the actual model. Start with a much larger square and repeat the folds on each quarter. You'll need to work out which creases are required. This step shows a completed quarter with some of the creases you'll need.



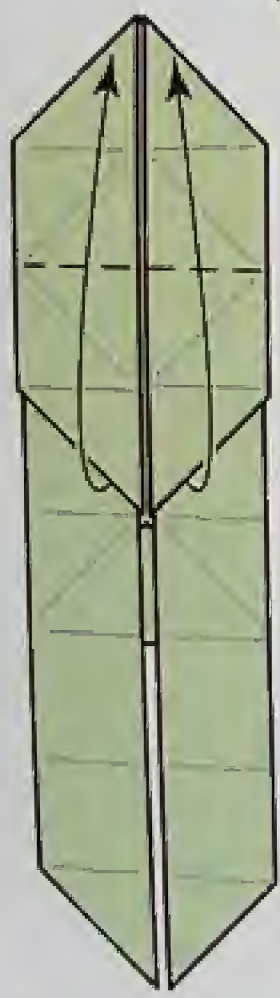
7 This shows the same sheet of paper with the Elias stretch applied to the remaining three corners. Practise folding up to this stage until you have a neat result. You are now going to make the leg flaps longer, by losing some of the paper between them. Open the lower layers fully.



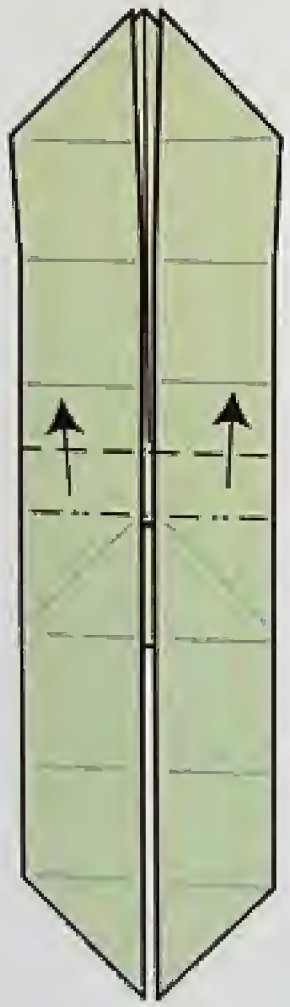
8 Push in the mountain crease from underneath to form a long straight edge at the bottom.



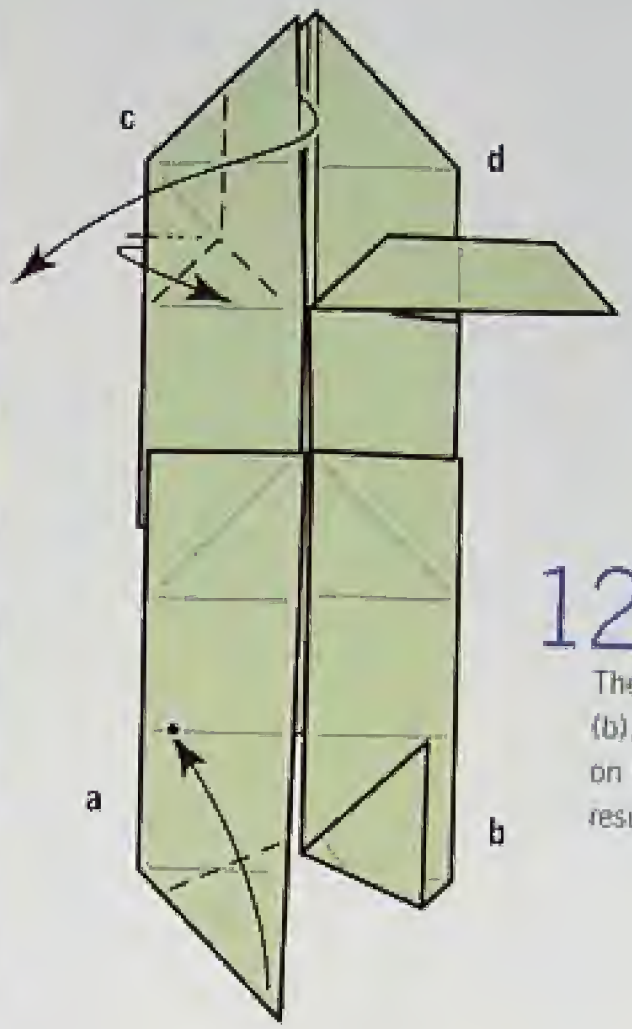
9 Swing the central triangular section upwards as the legs swing downwards. The upper raw edges come together again. It's easier than it looks!



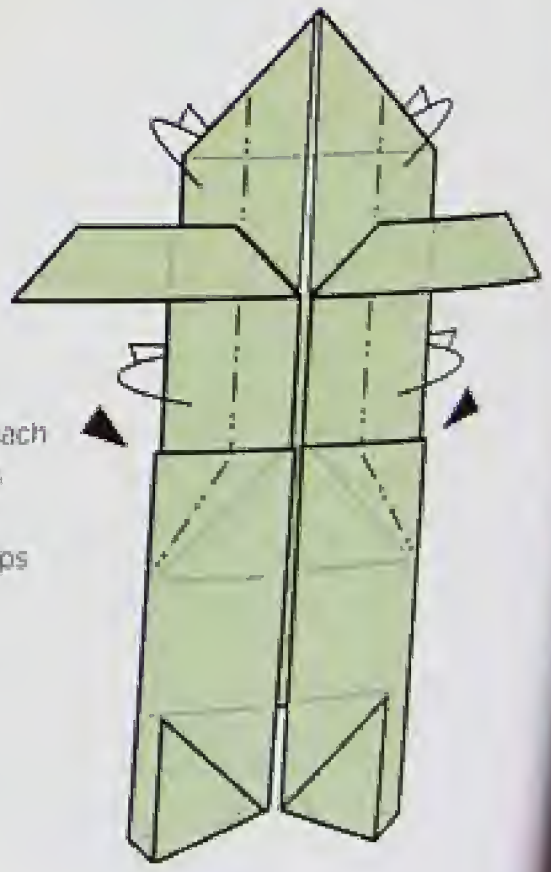
10 The legs flaps are now formed. Fold the arm flaps upwards.



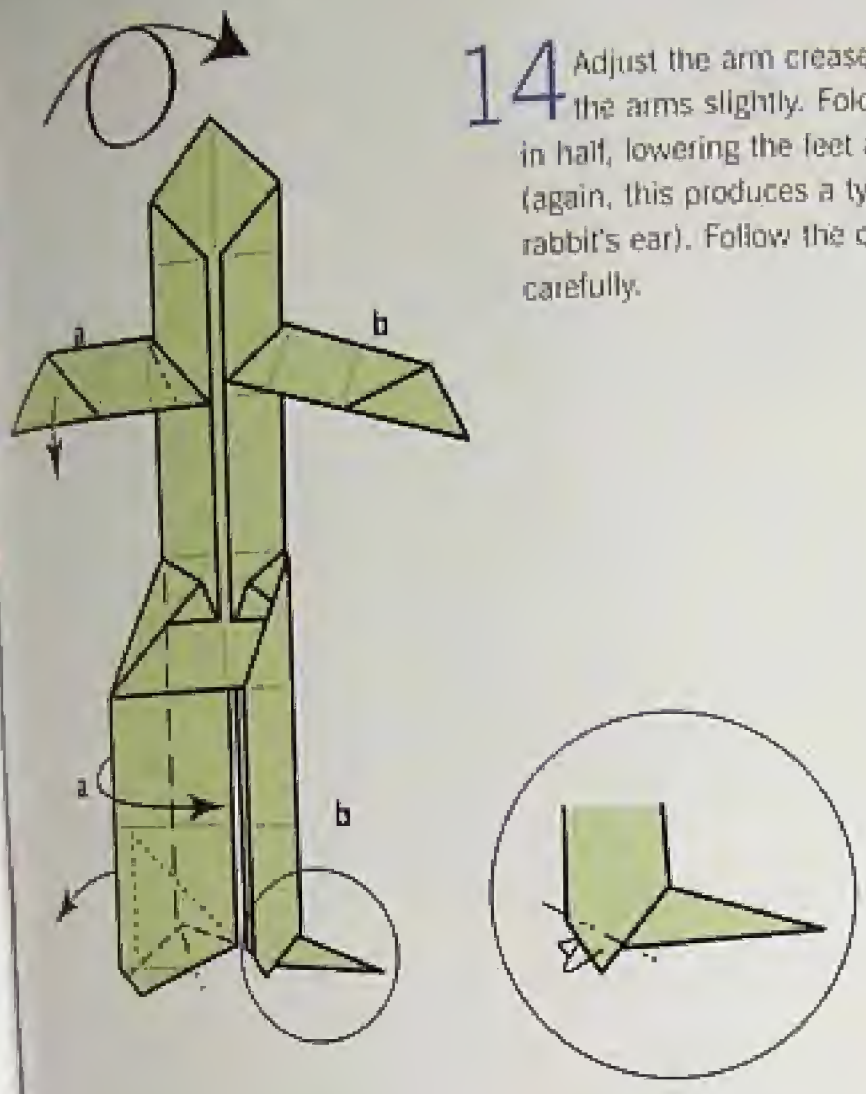
11 Make a pleat by forming a new valley crease.



12 Fold the lower points upwards (a). The result is shown (b). Form a rabbit's ear on the arms (c). The result is shown (d).



13 Mountain-fold each upper section in half, squashing the paper to form the hips (see next diagram).



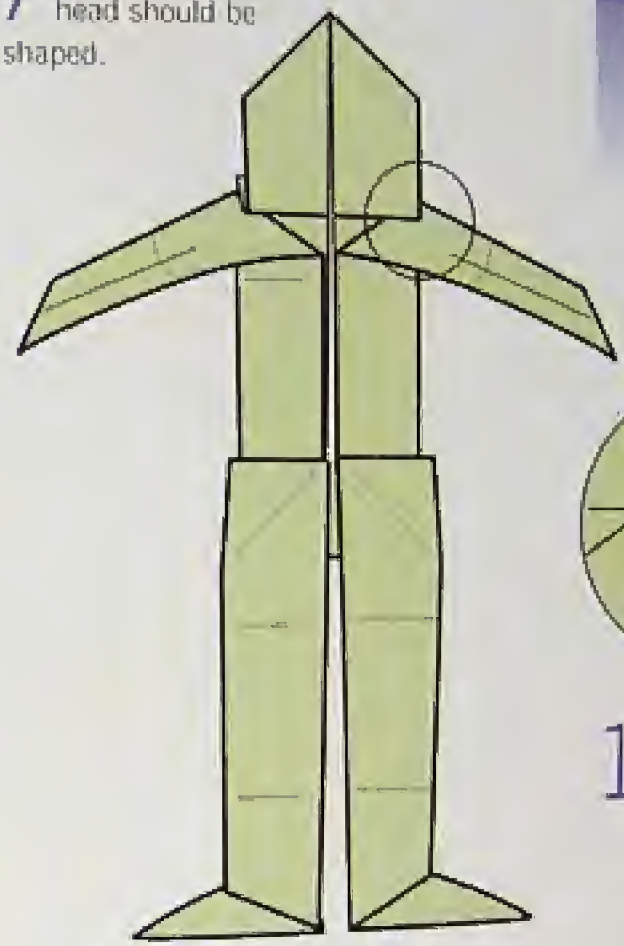
14 Adjust the arm creases to lower the arms slightly. Fold the legs in half, lowering the feet as you do (again, this produces a type of rabbit's ear). Follow the creases carefully.

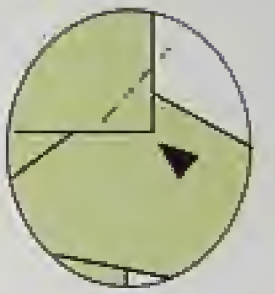
15 Shape the heels on both feet.

16 Shape the arms with gentle mountain folds. Pleat the head downwards.

17 This is how the head should be shaped.

ALSO SEE
Float page 16
Rabbit's ear page 20





18 Here's an enlarged section of the head. Make a small inside-reverse fold to shape the cheek.

19 Your Elias figure is complete.

CHALLENGE

The figure base is an amazing example of origami technology. Try and adjust your figure so it is strong, down or leaning over.

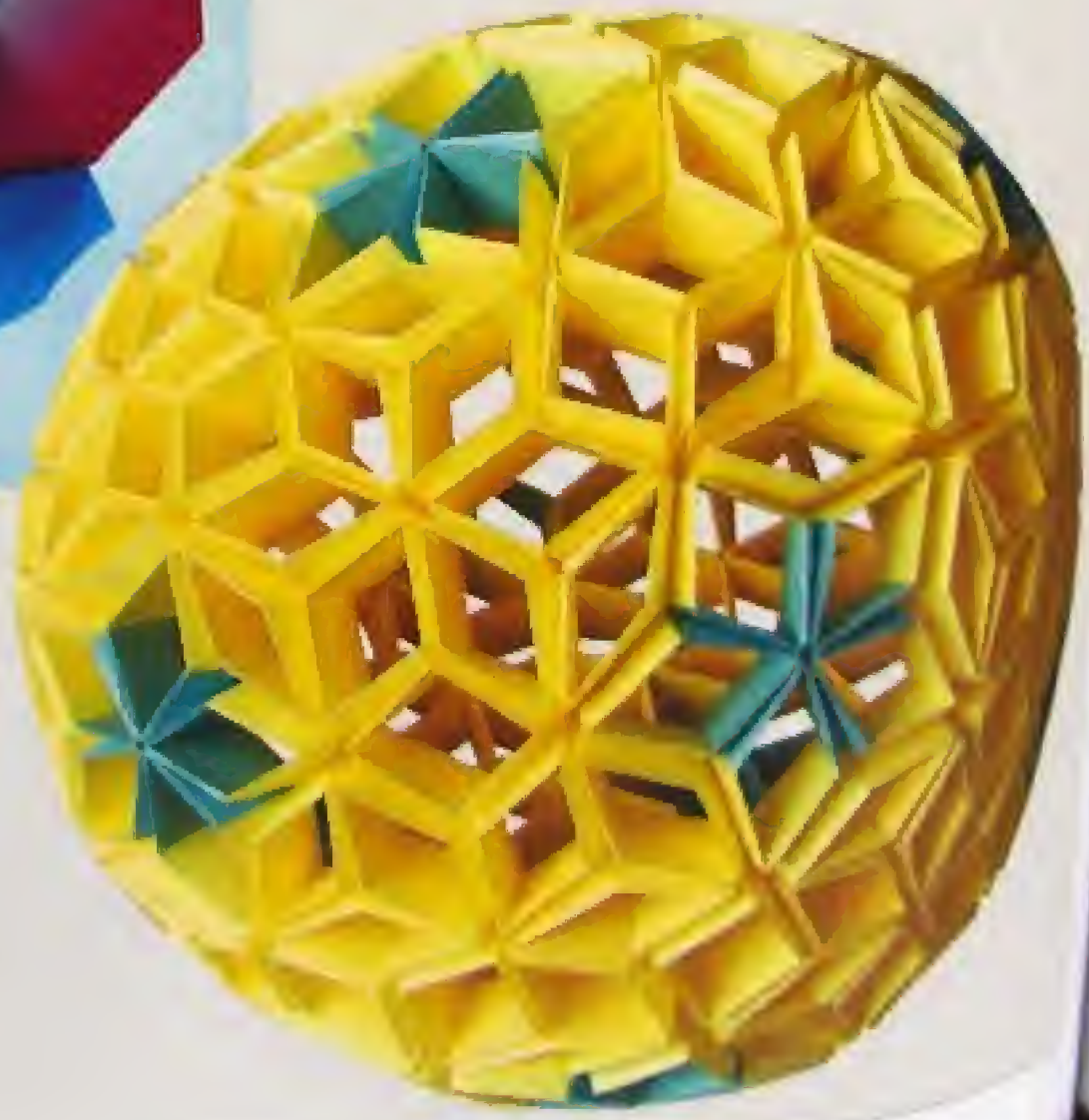
ORIGAMI FROM AROUND THE WORLD

The following pages will give you a wide-ranging view of the many directions origami is currently moving in. As increasing numbers of enthusiasts are attracted, some developments appear to move far from the mainstream, to the extent that many people no longer see them as origami. Some even argue that most of the great models have been discovered. However, basic elements can be reworked and result in fresh ideas. These pages represent a tiny fraction of the vast diversity of styles and subjects that origami encompasses.

ABSTRACT AND GEOMETRIC

Whether we realize it or not, origami has its underpinnings in geometry – we cannot escape it. The beauty of repetitive shapes and angles is undeniable. As we add more and more small units or 'modules' together, unexpected and elegant shapes appear. You'll need to fold with absolute precision for this type of design to work properly. You also need patience – many hundreds of sheets may be needed and the assembly is often complicated in the extreme, but the results are worth it!

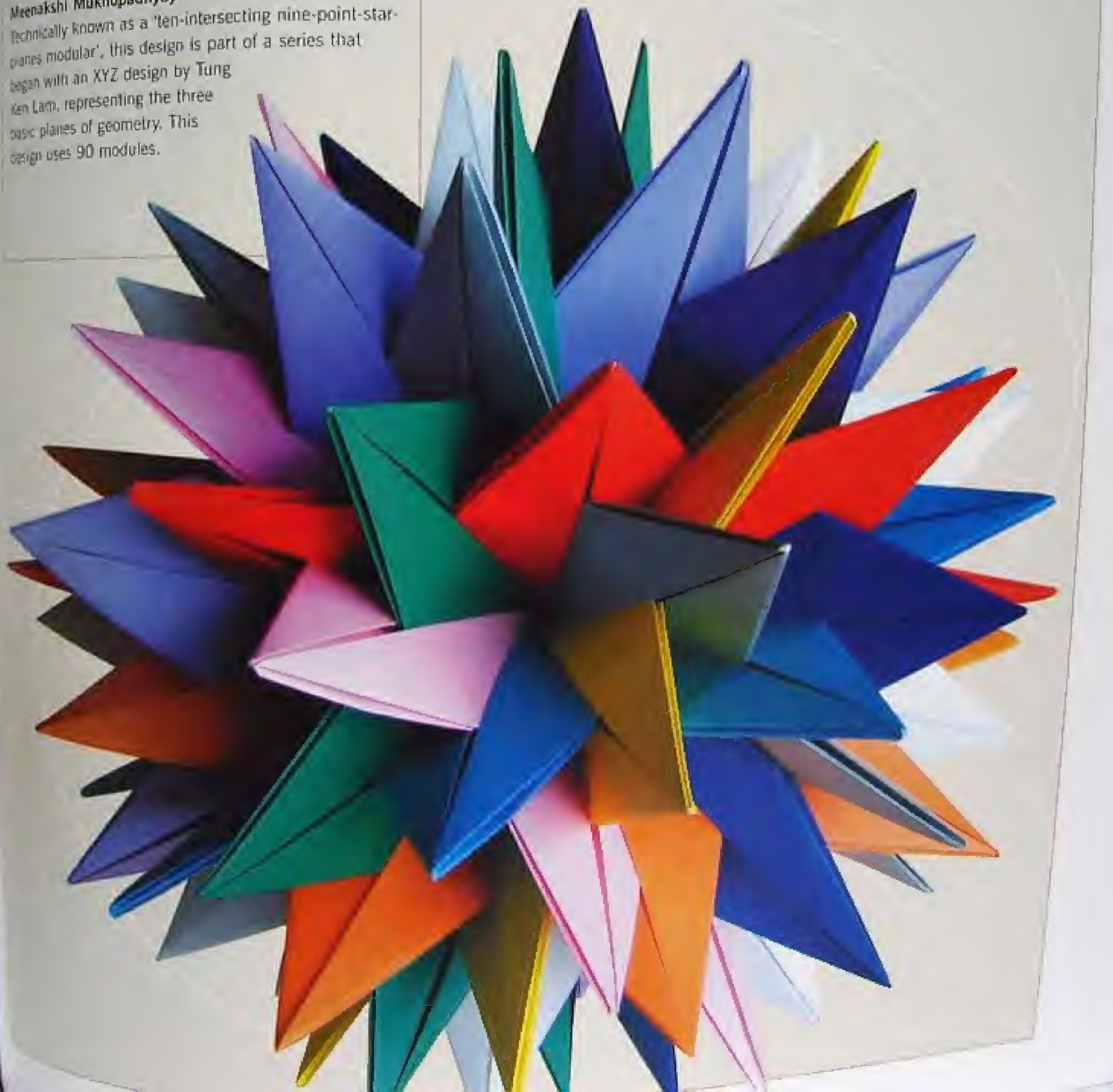
Dish: Created by Tomoko Fuse. Folded by Joachim Gunderlach
Four sheets of paper are woven together to form this elegant dish. While it could be made from a single sheet, the extra layers required would detract from the clean lines.



Knotologie: Created and folded by Heinz Strobl
Strobl has developed a technique based around knotting strips of tickertape together. These can be interwoven and combined in a near-infinite variety of forms.

QRSTUVWXYZ: Created and folded by Meenakshi Mukhopadhyay

Technically known as a 'ten-intersecting nine-point-star-planes modular', this design is part of a series that began with an XYZ design by Tung Kien Lam, representing the three basic planes of geometry. This design uses 90 modules.



Ring of Rings:
Created and folded by Mette Pederson
The American Pederson loves designing rugs, wreaths and other 2D modular forms – she has published seven books devoted to her designs. This spectacular form is made from 18 rugs, each made from 18 units, making a grand total of 324 sheets

Spiral Box: Created and folded by Tomoko Fuse
Fuse is single-handedly responsible for an entire genre of origami, that of modular boxes. She has written dozens of books, characterized by beautiful designs incorporating clever ways of forming lids that fit perfectly. She sees simple variations missed by most people, producing ever more elegant results.

Modular Design: Created and folded by Pietro Macchi
This modular design by the Italian Macchi shows a truncated octagon, with small bud-like sections emerging from the square 'holes'. The attractive paper adds considerably to the design.

FLORAL

Flowers are a popular subject, but they require sensitive folding in order to try and capture the beauty of the real thing. The more common species are often chosen as subjects. They give you an ideal opportunity to create presentation pieces incorporating leaves, stems and containers. They also make great presents!

Daffodils: Created and folded by Mark Leonard
Following a creative week spent with Vincent Floderer, Leonard has already begun to extend and develop the technique. These flowers have a feel that would probably be impossible without the crumpling technique.

Rose: Created and folded by Dave Collier
The late David Collier specialized in creating and folding flowers. This beautiful rose and stem is a fine example; simple yet elegant.

Irises in Vase: **Created by Toshie Takahama. Folded by Michael Saunders**

Takahama, the author of dozens of origami books, ...ues to combine simple, traditional designs with ...r own creations. These traditional irises with her ...esign of a vase and snail are a good example.

Dollar Bill Flower Pot: Created by Herman Lau. Folded by Michael Saunders
This ingenious design forms both flower and pot from a single sheet. Michael Saunders adapted the original design to work from a dollar bill.

Butterflies on Lilies: Created and folded by Daniel Naranjo
This design produces a butterfly and flower from a single sheet of paper, utilizing the different coloured sides. It has been made into an eye-catching design by multiple examples placed on an interesting background.

Twirl Flower with a Leaf Base: Created and folded by Krystyna Burczyk

This is a great example of how an initial idea can be developed by other folders. This technique for joining units together with curled flaps (initially created by Herman Van Goubergen) has been extended and taken onwards by Burczyk.

Topiary Tree: Created and folded by John Blackman

There is a type of Japanese design called 'kusudama', where many smaller, flower-like units are sewn together with a string to form decorative balls. This design uses a similar technique to produce an extraordinarily lifelike result, beautifully presented.

ANIMALS AND INSECTS

This subject area has probably produced more origami designs than any other. These designs range from simple, stylized versions of the chosen subject to complex, anatomically accurate renditions. All are valid and simply represent different parts of the origami spectrum.

The Sentinel: Created and folded by Robert Lang
Robert Lang not only creates wonderful and highly original designs, but folds them with exquisite attention to detail. The rock supporting the mountain goat is also harder to fold than it looks!

Hedgehog: Created by John Richardson. Folded by Gilad Aharoni
Richardson is a reclusive folder who, as far as is known, has never met another folder, yet has developed a number of amazing designs, each incorporating a startlingly new technique. This hedgehog design is over 20 years old, but still impressive.

Dog: **Created and folded by Akira Yoshizawa** Yoshizawa is regarded in Japan as a 'living treasure' and acknowledged the world over as a creator and folder of consummate skill and artistry. His ability to breathe life into a subject is legendary.

Tree Frog: **Created and folded by Robert Lang** Many folders would be happy with a frog that had basic arms and legs – Lang manages to create individual toes!

Moose: **Created and folded by Robert Lang**
Few words are necessary for this extraordinary piece of origami art. The design skill that produces a complex head, yet with legs that remain slender, with few layers, is apparent.

Elephant: **Created and folded by Dave Brill**
Brill is a well-rounded artist – he makes oil paintings, plays the piano and fashions elegant, clean origami designs. This elephant includes complex areas where required (the head) yet the body is open and uncomplicated. It isn't easy to combine these within a single design.

Squirrel: Created and folded by Michael LaFosse
LaFosse is a true origami artist. For his finished examples, he routinely creates a unique sheet of paper, incorporating the various paper elements (abaca, mulberry, etc) he feels will best suit the finished result. Like his mentor Yoshizawa, he breathes great life into his subjects.

Ant: Created and folded by Robert Lang
The main technical issue when designing insects is that the legs tend to become very thick due to the number of layers. Overcoming this requires efficient engineering, combined with paper that is thin but allows for crisp creases.

Butterfly: Created and folded by Michael LaFosse
Due to their beautiful wings and general vagueness of shape, butterflies are a popular subject for origami designers. The main aim is to produce wings with unusual patterns and profiles.

Fly: Created and folded by Alfredo Giunta
Giunta, from Italy, has designed a remarkable collection of insects. Few folders can match his touch when attempting to reproduce these designs.

Gnat: Created and folded by Mark Leonard
This design requires special paper that can be moulded to produce such fine legs. It's hard to believe that it comes from a single sheet of uncut paper.

Rat: **Created and folded by Eric Joisel**
This cartoon rat is a rare example of origami that actively caricatures the subject. It is not only stylized, but also fun! Frenchman Joisel has produced some extraordinary work that is well worth seeking out.

Jackson's Chameleon:
Created and folded by Robert Lang
The wonderful design of this piece speaks for itself.

Scrub Jay on Nest:
Created and folded by Robert Lang
This delightful assembly shows how perfectly origami can capture life.

Crab: **Created and folded by Robert Lang**
This design is fiendishly difficult to fold well – a real test of any folder's ability.

Seahorse: **Created and folded by Eric Joisel**
A magnificent example of true artistry. It seems impossible to believe that this fold isn't the real thing.

Rhino: **Created and folded by Stephen Weiss**
Dollar bills are perfect for origami and the extra paper allows the designer to create legs and ears with less effort than might be required from a square.

Samurai Helmet Beetle: **Created and folded by Robert Lang**
Another example of Lang's artistry, giving depth and life to this complex design.

FIGURES

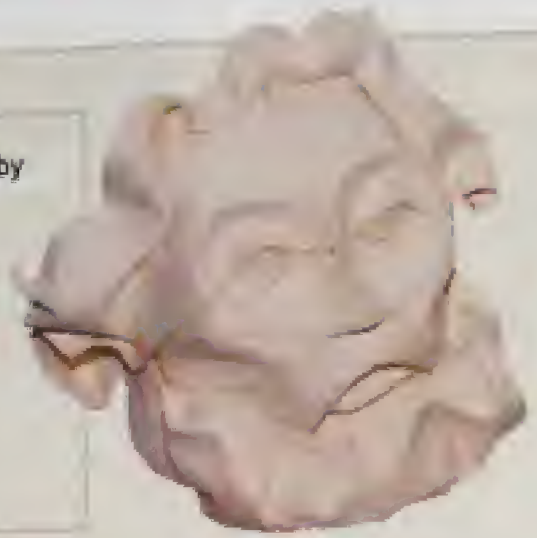
Strange as it seems, the human figure is very difficult to achieve from a square of paper. This is why most origami designs in that area exaggerate proportions, or cut limbs off altogether! However, many rise to the challenge of capturing the infinite variety of the human face and form.

Devil: Created and folded by Jun Maekawa
This design impressed everyone when it was first released in the 80s. It is still a masterpiece and represents a benchmark of folding ability – if you can make this, you are well on your way!

Ghost: Created and folded by Carlos Genova
The only 'lifelike' part of this design is the fingers, but our imagination fills in the details and we have no trouble in accepting this as a human-like figure.

Rodin's 'The Thinker':
Created by Neal Elias
Elias was highly active during the 1960s when he developed a technique to produce arms and legs. It is still in wide use by designers today, and has become known as the 'Elias stretch'.

Mask: Created and folded by Nick Robinson
This mask allows for many subtleties by adjusting the shape of the eyes and mouth.



Masks: Created and folded by Eric Joisel
There are many origami masks around, but Joisel moved them into a different league with his range of flowing, animated creations.

Angel playing the Lute: Created by Fumiaki Kawahata. Folded by Gilad Aharoni
Kawahata is one of a number of Japanese folders known as the 'Tanteidan' (Detectives), who are pushing the boundaries of complex origami ever further.

Le Victoire:
Created and folded by Daniel Naranjo
Influenced by the work of Hojyo Takashi, this design is elegant and flowing. It incorporates elements of a statue rather than literal depiction.